In The Matter Of:

UNIVERSAL CITY STUDIOS v.
ERIC CORLEY

ROBERT SCHUMANN
July 11, 2000

INTERIM COURT REPORTING
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NEW YORK, NY 10017
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to your litigation in this case, the litigation or any testimony of yours in this case?
A: On the last affidavit I believe there is some information, perhaps, on a diskette.
Q: And where is that diskette?
A: It would be in my office or potentially my home.
Q: Were you told to produce that today?
A: I was not, no.
Q: Have you seen the production document required that was served with your notice of deposition asking you to produce certain material?
MR. MERVIS: Object to the form of the question.
Q: Mr. Schumann?
A: I don't — I don't recall having conversations. I don't recall if I saw it.
Q: Did anybody tell you to produce that diskette?
A: Not that diskette, per se, no.
Q: What's on the diskette?
A: What would be on the diskette is portions of drafted language.

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Q: How long will it take you to get us that diskette?
A: I imagine I could get it, when I get back to the office, in an expeditious manner.
Q: Where is your office?
A: Herndon, Virginia.
Q: Can you have it FedExed to us today so that we can have it tomorrow morning?
MR. MERVIS: Well, it's not going — I think the more perfect question is: Could you FedEx it to Proskauer today. Because it's not going to go directly to you, Mr. Garbus.
MR. GARBUS: My question was, since we asked for its production: Will you FedEx it to us?
MR. MERVIS: The answer is, no.
MR. GARBUS: When is it, Mr. Proskauer, to us?
MR. MERVIS: My name is not Proskauer.
MR. GARBUS: What is your name?
MR. MERVIS: I think I told you at the beginning of the deposition, it is Mervis.
MR. GARBUS: Mervis.

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MR. MERVIS: And I, Mr. Garbus, did you the courtesy of remembering your name, so let's try to see if you can remember mine.
MR. GARBUS: Mervis, when will we get it?
MR. MERVIS: Mr. Mervis.
MR. GARBUS: Mr. Mervis, when will we get it?
MR. MERVIS: I don't know. We're going to have to look at it first and then we'll decide whether it's producible.
MR. GARBUS: When will you look at it and when will you produce it?
MR. MERVIS: I've already answered your second question. And I'm going to answer your first, and then I'm not going to answer any more of your questions.
The first is, it sounds to me like — at least from the witness's description — that the disk might contain material that you might be entitled to. So if we get it tomorrow, we'll look at it tomorrow.
Q: What else is on the disk besides the

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documents that are relating to this case; is there any personal information on the disk?
A: I don't know offhand. I would have to look.
Q: Now, other than the disk, are there any other pieces of paper in your office in Virginia that relate to this case or any drafts of affidavits in this case?
A: In my office?
Q: Yes.
A: I don't believe so, no.
Q: Prior to the time you filed your first affidavit, did anyone ask you to check out to see how long it took to download a DVD?
MR. MERVIS: Object to the form of the question.
A: I guess I need some clarification of the question.
Q: You don't understand the question?
A: I don't understand which affidavit, the time frames.
Q: Your first affidavit is dated January 19th, 2000. Prior to the time that you prepared that affidavit did anybody ask you to

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see how long it takes to download a DVD through a deencrypted DeCSS formula?
MR. MERVIS: I'm sorry, can — the last word of that is what?
(Record read.)
MR. MERVIS: I object to the form of the question.
Q: Do you understand the question?
A: Not completely. But — I didn't quite understand some of the later language.
But the result is, no.
Q: Do you understand the question enough to answer it?
A: Yeah.
Q: Thank you.
Now, other than the experiment that you performed in your last affidavit concerning the downloading of a DVD after having the DVD deencrypted through DeCSS, have you performed any other experiments with respect to downloading DVDs?
MR. MERVIS: I object to the form of the question.

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You can answer it if you understand it.
MR. HERNSTADT: Mr. Schumann, do you understand it?
THE WITNESS: Can you repeat that question, please?
MR. MERVIS: Why don't we have it read back.
(Record read.)
A: I don't believe I ever did an experiment to download DVDs.
Q: Did you ever use DeCSS, other than in the one experiment that you referred to in your third affidavit?
MR. MERVIS: I'm sorry, have we shown him his third — this is the second affidavit that we've shown him.
MR. GARBUS: We have not shown him the third affidavit.
MR. MERVIS: Okay. Well, obviously if you have a memory of it you can certainly answer it.
If you need to see it —
THE WITNESS: Can you — I'm sorry,

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can you repeat that full question, please?
MR. MERVIS: Just read it back.
THE WITNESS: Read it back. I'm not sure if —
(Record read.)
A: In relationship to this case?
Q: Yes.
A: No.
Q: Can you tell us: At all?
A: Yes.
Q: When was that?
A: It was for a different client.
Q: Which client?
MR. MERVIS: Well, wait a minute. Before we get into that I'm going to have to confer with him, because it could involve the privilege and work product.
I guess you can tell — well, no, I need to confer with you.
MR. HERNSTADT: If you want to, we can make the name of the client confidential —
MR. MERVIS: I can't even do that because I've got to know what it is first. Because it could well —

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Q: Mr. Mervis, is it a client in any way related to any of the plaintiffs in this case?
MR. MERVIS: Well, first of all, he's Mr. Schumann.
And you can — and yeah, you can answer that question.
A: No.
Q: Is it related to a movie studio?
A: Actually, I should rephrase my answer.
It was not a client. It was a different project.
Q: Which project?
MR. MERVIS: Well, I'm going to — I'd have to confer with him on that.
Okay. Let's —
THE VIDEOGRAPHER: The time is 1:00 p.m. We're going off the record.
(Recess taken.)
(Schumann Exhibit 2, copies of development logs, marked for identification, as of this date.)
(Schumann Exhibit 3, copy of multipage exhibit, the first page is entitled

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Supplemental Declaration of Robert W. Schumann in Support of Plaintiffs' Motion to Modify the January 20, 2000 Order of Preliminary Injunction and for Leave to Amend the Complaint, marked for identification, as of this date.)

(Schumann Exhibit 4, copy of multipage document, the first page is a memorandum to various parties from M.D. Litvack, dated 12/23/99, bearing Production Nos. S 10002 through S 10032, marked for identification, as of this date.)

THE VIDEOGRAPHER: The time is 1:03 p.m. We're back on the record.

MR. GARBUS: Can I hear the last question?

(Record read.)

Q: How much money have you received thus far —

MR. MERVIS: Mr. Garbus, wait, let me — let me just say something real quick. Because, in consulting with Mr. Schumann, we both agreed that he omitted information from an earlier answer that I

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would assume you'd want to hear. So you can leave it for later. It was in response to your question as to whether he's used DeCSS since the time of his third affidavit. He told you, no, and, in fact, the answer is yes. Whether you want to hear that now or later is up to you.

Q: Did you have a conversation with Mr. Mervis at the break?

A: I did.

Q: And what did you say and what did he say?

A: We —

MR. MERVIS: Well, wait. You can answer that, except to the extent that we discussed issues of whether or not something's privileged.

THE WITNESS: Ah, yes.

MR. MERVIS: Correct?

THE WITNESS: Okay.

MR. GARBUS: I object to your interpretation of what I can ask him.

MR. MERVIS: That's fine. That's my

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instructions, so please go ahead.

Q: Go ahead, sir.

A: We discussed two issues.

Q: Go ahead.

A: We discussed in what circumstances I had used DeCSS outside this case. And Mr. Mervis also correctly pointed out to me that I had used — that I had perhaps misunderstood your question, which I did, relative to my use of DeCSS. And he pointed out to me that I had, in fact, which I have used DeCSS. And I'd be happy to discuss my use of that in relationship to the case.

Q: Before we get to that: How much money have you received from the plaintiff or their attorneys thus far?

MR. MERVIS: Go ahead.

A: "The plaintiff," you mean the MPAA?

Q: Whoever is paying you.

A: I don't know exactly how much.

Q: Have you submitted bills?

A: Yes, I have.

Q: How many bills have you submitted?

A: I don't know. Probably five or six.

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Q: Can you tell us the total number of those bills — the amount set forth in those bills?

A: I can — I can tell you roughly what that is now and I can —

Q: How much?

A: — I'm sure, produce the actual invoices.

RQ MR. GARBUS: I ask you to produce the invoices.

MR. MERVIS: We'll take it under advisement.

Q: Did you keep time sheets of your work?

A: I did.

Q: Are you being billed — are you billing them on an hourly basis?

A: I am.

RQ MR. GARBUS: I ask you to produce the time sheets.

MR. MERVIS: I'll take it under advisement.

Q: What is the total amount of money that you've billed now for?

A: I am — I would estimate it at around

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50 to $60,000.
Q: Congratulations.
MR. MERVIS: Objection. Come on, Mr. Garbus.
Q: And with respect to the future, how much more money do you expect to get from them?
MR. MERVIS: Objection.
You can answer the question, if you have any idea.
A: I have no estimate as to how much of my time will be needed by the plaintiffs.
Q: What is your hourly rate?
MR. MERVIS: For what?
A: As we discussed earlier, my hourly rate for this case is $325 per hour.
Q: Now, other than you, is there anybody at your firm who is billing them for work?
A: Not other than a small amount of work with my partner relative to the first affidavit, no.
Q: And is — are you — is your work for the MPAA solely limited to this case or are you involved with them in other matters as well?
A: As we covered in my earlier

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deposition, the only work I have done for the MPAA is related to this case.
Q: That was at that time. So your answer is that it's the same answer today as it was then?
A: Yes, it is.
Q: It's not that you were asked last time about what you were doing today, was it?
MR. MERVIS: No, no, no.
Don't answer that question.
Come on, Mr. Garbus, let's try to get some information.
Q: Now, with respect to the plaintiffs, the movie studios, have you ever worked for any of them?
A: Again, and I'm not trying to be evasive here, my answer would be the same —
Q: Then don't try to be evasive.
MR. MERVIS: Well, no, no, no, no, no. Let him finish his answer, please.
Go ahead.
A: My answer will be the same as it was in the last deposition: That I have done no direct work for any of the plaintiffs, either

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then nor now.
Q: Thank you.
And is there any future work contemplated by you or they in any future litigation?
MR. MERVIS: "They" being the plaintiffs, the studios?
MR. GARBUS: Yes.
A: No.
Q: Are you in any way involved in the Napster case?
A: I am not.
Q: Has anyone from the recording industry —
A: Excuse me. Not in any Napster litigation, no, not at all.
Q: Are you involved in any way, in any aspect of the whole question of downloading or illegal copying of audio material?
MR. MERVIS: Object to the form of the question.
But you can answer it.
A: No.
Q: How much did you make last year

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testifying or doing work for lawyers in cases?
A: Other than my —
Q: Including this.
A: Including this case?
MR. MERVIS: Well, wait a minute. There wasn't — no. I'm sorry.
Go ahead.
A: Can you — could you please further differentiate, if appropriate, between the MPAA versus this — I guess I don't understand the distinction there and if you can clarify it.
Q: How much money did you make in the year 1999 from the MPAA, any movie studio or any third party that retained you for the purposes of either preparing information for litigation, having you testify for litigation, or having your colleague testify for litigation?
A: I think maybe like $15,000.
Q: And how much this for — thus far this year?
A: Again, I would have to look at the details, but probably 45 or something — again, these numbers are off the top of my head.
Q: It's a new business for you?

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experts who are better — not better qualified, but other experts also who can testify to the downloading or the networking area.

Q: Who told you that they were looking for experts better qualified than you?

MR. MERVIS: No one, because that's not what he said.

Q: Did anybody tell you that they were looking for experts better qualified than you?

A: No.

Q: Did anybody tell you why Mr. Shamos was being hired?

MR. MERVIS: Object to the form of the question.

Q: Or any other expert was being hired to go into the question of downloading DVDs through the use of DeCSS?

MR. MERVIS: I object to the form of the question.

A: I have no knowledge.

Q: Did you understand the question?

A: It was a question about why the law firm did something, and I have no knowledge about why the law firm decides to do things.

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Q: Do you have any idea why they did?

MR. MERVIS: Object to the form of the question.

You can answer.

A: I can imagine, but —

Q: What do you imagine?

MR. MERVIS: Well, it calls for speculation.

If you feel — I mean, I assume you don't want him to speculate, but...

MR. GARBUS: I'm happy to have him speculate.

MR. MERVIS: You are?

MR. GARBUS: Go ahead.

MR. MERVIS: Okay. Well, being asked to speculate —

MR. GARBUS: He's an expert witness.

MR. MERVIS: That doesn't —

A: I mean, if you'd like me to speculate, I'll be happy to speculate —

Q: Thank you.

A: — that there are many other people who can also competently testify about what the capability of the network systems are.

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And I could see why the plaintiffs would want to have potentially additional witnesses available for that purpose.

Q: Now, when you and Mr. Hart discussed the comments that had been made by defendants' witnesses concerning what you had done with the downloading, whether you call it a test or mere downloading; what did Mr. Hart say and what did you say?

A: I'm sorry, can you — could you —

Q: Tell me the conversation you had with Mr. Hart —

MR. MERVIS: Wait, stop.

THE WITNESS: Could I clarify some language?

MR. MERVIS: Mr. Garbus, earlier in the deposition you asked him to tell you when he didn't understand the questions. He was, I think, trying to tell you that and you cut him off. So could you please let him finish.

Q: Did you not understand the question?

A: That's correct.

MR. MERVIS: Thank you.

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Q: Tell me the conversation that you had with Mr. Hart after you were told that defendants submitted affidavits attacking or questioning your third affidavit.

MR. MERVIS: I'm sorry, can you read that back?

(Record read.)

MR. MERVIS: Okay. You can answer.

A: The — again, I don't recall the exact words. But the essence of the discussion was around the, I guess, timing information, if you will, that was in my affidavit. And that timing information was theoretical and was not to the result of experiments. And I don't believe the affidavit implied that. And if it did, it was certainly not the intent.

Q: Will you please tell me the conversation that you had with Mr. Hart.

MR. MERVIS: I thought he just did.

Q: That's the entire —

A: Can you tell me which part of it you'd like more clarification on?

Q: Was that the entire conversation?

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A: We discussed the timing questions. I believe Mr. Hart may have asked me what the basis of those timings were. I explained the basis of those timings —
Q: Explain it to me.
A: Those times — the timings in my affidavit are based on the same type of math we went through in the previous deposition, which is a theoretical maximum capability of the networking technologies that were discussed in the affidavit.
Q: So it's fair to say that you did nothing physical with respect to that test or experiment, other than do numbers: You didn't try and download a DVD, you didn't try and use DeCSS, you just came up with numbers and a theoretical reality; is that right?
A: That's not what I said.
Q: Tell me what you said, if I misunderstood you.
A: What I said was, that the timing portion and the discussion of download times was theoretical and was not based on experiment. So the networking portion, if you will, of the

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affidavit was theoretical.
Q: What was based on experiment?
A: The portion of the affidavit — I'd have to look at it in detail, but —
MR. MERVIS: That would be helpful, actually.
A: — essentially the portion of the affidavit that deals with DeCSS'ing a movie, putting it on a hard drive, watching it with the viewers was not theoretical, but was actual experiment.
Q: Which movie did you see?
MR. MERVIS: Well, come on. It's not a memory test. Just show him the document?
A: I mean, you can look at it. I believe it was You've Got Mail.
Q: Was that on your download? Was that on your machine, by the way, your computer?
A: On which computer?
Q: The one that you lost.
A: No, that was not.
Q: Where is that?
A: That computer is in my office.
RQ Q. Will you produce that?

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MR. MERVIS: The computer?
MR. GARBUS: The hard drive or any information on it that indicates anything about the experimentation that you just say you performed.
THE WITNESS: I'd be happy to make that computer available for someone who wants to look at it.
MR. GARBUS: When?
MR. MERVIS: Well, he's not — I mean, again, it's the same problem. He's not going to make —
Because he's working for us: If he's going to make it available to anybody, he's going to make it available to us. And then if we deem it to be responsive and properly producible, we'll produce it to you.
I suppose the when question is fair. When can you make it available to us?
THE WITNESS: From my side, the same time line as the other. I can't — there's no one in Virginia now who I can have — excuse me, send it, because there's no one in the office today. So I will have to get

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there myself, which I won't do till this evening.
Q: So you can FedEx it tomorrow morning to Proskauer?
A: Theoretically, absolutely.
Q: So Proskauer would have it by Thursday?
MR. MERVIS: If that's what happens, sure.
Q: Is that right?
A: It's possible, yes.
Q: So you can FedEx all of the information we've been requesting to Proskauer by Thursday and all the other information we will be requesting?
MR. MERVIS: Well, I don't know how he can answer the second part of that question, but — in fact, he can't.
A: So far there is no reason why I couldn't do that, yes, that I am aware of.
RQ MR. HERNSTADT: And, Mr. Mervis, you will advise us Thursday morning, if you would, whether or not you've gotten it and when you expect to give it to us.

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Q: Do you know that that information was called for in the original document request served upon you in early March of this year?
MR. MERVIS: I'm sorry, what information?
MR. GARBUS: Any and all information, on a continuing nature, that relates to this case in any way.
Q: Did you know that?
A: Again, I don't recall if I saw the text of an exact order or request, or anything like that. I mean, I've worked primarily verbally through the Proskauer firm.
Q: Did Proskauer ever send you, in May, the request for information that we had made of you prior to your testimony?
Did you ever see that document?
MR. MERVIS: Assuming there is such a document.
MR. GARBUS: I tell you there is such a document.
MR. MERVIS: Okay.
A: I believe it exists. It is possible it was sent to me. I do not recall.

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Q: When you say you "believe it exists," how do you know that it exists?
A: I'm taking your —
Q: Mr. Mervis apparently doesn't know.
A: I'm taking your word for it that you created such a document and forwarded it to Proskauer.
And I know that I had discussions with people within the Proskauer firm related to the delivery, I guess, or whatever of documents relative.
And this is the result of that request and —
MR. MERVIS: "This" being Exhibit 2.
A: Exhibit 2. And I guess the — I mean, I turned over a set of information to Proskauer.
Q: When did you turn over that information to Proskauer and what information did you turn over to Proskauer?
A: I turned over all of my information related to my work with the MPAA that I did, including the reports and the interim report that has been discussed here, and this.
I don't believe there were any

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handwritten notes, because I tend to clean that up after I'm done with my work.
And then I assumed that Proskauer had all the other discussions I had with them.
Q: Now answer my question: When did you turn it over to Proskauer?
MR. MERVIS: "It" being what?
MR. GARBUS: The documents you've just referred to.
A: They would have been sent three — I don't know, two, three weeks ago maybe. Four weeks ago?
Something like that. I would have to look.
Q: When did Proskauer first ask you for those documents?
A: They asked me four or five days before I was able to produce them.
Q: Were you asked to produce them prior to the date your first deposition started?
MR. MERVIS: If you even have that in mind, the date.
A: Was I able or asked to produce them?
Q: Asked to.

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A: No.
Q: So the first time they asked you to produce any documents was after your first deposition was concluded?
A: That's correct.
Q: How long after your first deposition was concluded were you asked to produce documents?
A: I would have to look at the time lines. It was, I believe, several weeks.
Q: How would you learn what those time lines were?
A: I would have to look in my notes of my conversations with the Proskauer people.
Q: And do you have those notes with you here today?
A: Yes, I do.
Q: May I see them?
MR. MERVIS: No. Actually, you can't yet, Mr. Garbus. Because the notes — well, if you give him a few minutes he could probably find that particular note or notes, but that doesn't —
MR. GARBUS: I'm asking for all the

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notes and then we'll go to that particular note.
MR. MERVIS: Well, the problem is that there are — as I understand it, his yellow pad contains notes not only about this case, but about another unrelated retention from Proskauer, which obviously you can't see. So we would need to take some time to go through it and figure out what's what, then you can see all the notes that do refer to this case.
MR. GARBUS: What is this other retention from Proskauer?
DI MR. MERVIS: What is the other — You can tell him in very general terms —
You know what, you can't even do that. Don't answer the question.
But it's got nothing to do with this.
Q: What does it relate to?
MR. MERVIS: Objection. Don't answer the question.
THE WITNESS: Okay.
Q: When were you retained by Proskauer in

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this other matter?
MR. MERVIS: You can answer that question.
A: It would have — I believe it was early March.
Q: And does that involve any legal proceeding?
DI MR. MERVIS: Objection. Don't answer the question.
Q: What is your hourly rate?
DI MR. MERVIS: I don't think — don't answer that question, it's — just don't answer the question.
Q: You've told us that you expect to make — you — thus far you've billed, I think, $50,000 with respect to this case. Can you tell me what your gross earnings were in the year 1999?
MR. MERVIS: Are you talking about his company or personal?
MR. GARBUS: Either one.
MR. MERVIS: If you know.
A: From what — any particular sources you care about or —

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Q: Total.
A: Don't look at my W-2, but it was probably on the order of 120, 130,000.
Q: That's for you individually?
A: That's correct.
Q: And for your company?
A: For my company, about 15,000.
Q: And the money for your testimony here goes to you or to your company?
A: To my company.
Q: So that last year you made 120,000. In this case alone —
THE WITNESS: Can I clarify that? That was as an —
MR. GARBUS: No. Let me finish.
MR. MERVIS: Yeah, let him finish.
Q: In this case alone you're going to make 50,000 and that is being paid — and that is for work you did over a what, five-month period?
MR. MERVIS: Well, this is — object to the form of the question. It's —
If you understand it, you can answer.
A: I guess I don't understand the relationship between the two figures.

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Q: Is it fair to say that at this point more than half your income is coming from the Proskauer law firm or the MPAA?
MR. MERVIS: Who is the "you," that you're talking about?
Q: Do you have any doubt about who I'm talking about, Mr. Schumann?
A: Actually, right now I do, yes.
MR. MERVIS: I have.
Q: You, Mr. Schumann.
MR. MERVIS: Mr. Garbus, please keep your voice down.
A: My personal income?
Q: Yes.
MR. MERVIS: You're asking him whether he — some portion — are you asking about whether his personal income comes from Proskauer or the MPAA?
A: My personal income comes from a salary paid by my company or by Cinea to me.
(Mr. Weinglass left the room.)
Q: Is half of your company's income for this year anticipated to be coming from Proskauer or the MPAA for the testimony or for the work

that you are doing in this litigation?
MR. MERVIS: Object to the form of the question.
A: This year?
Q: Yes.
A: No.
Q: How much?
Can you give me your best estimate will be the percentage of your firm's income or your income that will be coming from Proskauer, the MPAA or any of the movie studios?
MR. MERVIS: I object to the form of the question.
A: At this point my guess would be maybe 25 percent.
Q: Can you give me — putting aside "this point," can you give me a projection for the end of the year?
A: That — I'm sorry, that's what I meant. My projection at this point for the end of the year would be, perhaps, 25 percent.
Q: Of the $50,000 roughly billed how much of it have you received?
A: Me personally?

Q: You or the firm.
A: I don't know. We've received, I don't know, maybe 80 percent. Again, I'd have to look exactly. I know we have —
Q: So approximately 40,000?
A: — we have outstanding invoices and we have unbilled work.
Q: At the present time —
A: Yes.
Q: — for the 19 — 2000 is more than half the cash that you or your firm receive coming as a result of your involvement with Proskauer, or MPAA, or any movie studios?
MR. MERVIS: Can you read that back?
(Record read.)
MR. MERVIS: I object to the form of the question.
You can answer.
A: I would think that's probably accurate.
Q: How about two-thirds?
A: No, I don't —
Q: Is that more accurate?
A: No, I don't believe so. But we have

some outstanding invoices that might affect that.
Q: How much is outstanding?
A: I think I have 20 or $30.000 in outstanding invoices at this point, across my clients.
Q: So that —
MR. MERVIS: No, he just said across his clients.
A: Across my clients.
MR. MERVIS: I was commenting on Mr. Hernstadt's gesture, not on anything that you said, Mr. Garbus.
A: Across my clients, not to...
Q: I'm sorry, what does "across my clients" mean?
MR. MERVIS: Ask him. I understood it.
A: Across all of my clients. I have a client base, and across those clients if have somewhere between 20 and $30,000 in outstanding invoices.
Q: And how much of that is the MPAA, any of the plaintiff studios —
A: I believe —

Q: — or this new project that you're doing with Proskauer?
A: I believe right now I have, I don't know, $12,000 in outstanding invoices to the MPAA, something like that.
Q: So is it fair to say that for the first six months of this year —
A: That's approximate.
Q: — at least half your income and half the outstanding invoices come from either the MPAA, Proskauer or the nine movie studios?
A: For Cinea, yes, that is accurate.
Q: And for Robert Schumann?
A: My pay has no relationship to the actual work performed. It's a salary. It's not — I'm not paid based on the work I do.
Q: Does the payment that you receive have anything to do with the amount of money that Cinea receives?
A: No, it is in no way tied — other than if there's enough money to pay me.
Q: So the more money that Cinea makes, the more money that Schumann makes?
MR. MERVIS: No.

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first two declarations you said that — or your first declaration you —
A: Yeah. The first version I did it initially for the MP — in the MPAA as an exercise of: What does this thing do?
Q: Right. And in that case you did not view the movie that you copied?
A: Right. In that case I didn't look at the movie, that's correct.
Q: And then for your June 1st declaration, which —
MR. HERNSTADT: Let's — why don't we put it in. I've got to — unfortunately, I'm going to give you a copy —
Mark this Schumann 5?
MR. MERVIS: 6.
THE WITNESS: Oh, this is off of 2600?
MR. HERNSTADT: Yeah.
THE WITNESS: I actually have a copy here, if you want. Oh, it may be marked up.
MR. MERVIS: Oh, of...
MR. HERNSTADT: This is actually — this is off of Cryptome.
I will represent to you that this is

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an accurate copy. This is a Cryptome. I took it down from Cryptome because I was unable to, you know, get an unmarked up version for use this morning.
MR. MERVIS: Well, I guess it's fair to say — I'll accept that representation. Although, I guess it's fair to say there may be some scanning errors and that sort of thing.
MR. HERNSTADT: What number?
THE REPORTER: I have 5.
MR. MERVIS: Oh, 5?
MR. HERNSTADT: 5, okay. Thanks.
Yeah. And at the appropriate time I'm going to ask Mr. Schumann to take a look at it and make sure that it's accurate.
Q: But in this declaration you talk about using DeCSS to copy — to decrypt and copy You've Got Mail. I'm not going to ask if —
A: This is the second supplemental, yeah, correct.
Q: Yes. Okay.
And let's call this, for accuracy sake, your June 1, because that's the date on it.

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A: Okay.
Q: Was that the same movie you'd done the first time, you had used the first time?
A: No. I don't actually recall the exact movie I did the first time. I believe it was The Matrix, but I'm guessing.
Q: Okay. And when you did You've Got Mail, did you decrypt the entire movie?
A: When I — in this last one?
Q: Yeah.
A: Yes, I did decrypt the entire movie.
Q: And did you view the entire movie?
A: I viewed the entire movie. I didn't sit and watch it in detail, but I did other stuff while I was — while the movie was playing. So I'd looked up every now and then, make sure it was still playing.
Q: Okay. And are those the only three times you've used DeCSS?
MR. MERVIS: Wait. I've only counted two, so...
A: No, we had three, I believe.
MR. MERVIS: I'm sorry, I —
A: Along with what I just did a couple of

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days ago.
MR. MERVIS: Oh.
Q: Right. And what you did a couple of days ago is repeat what you did in your June 1st declaration?
A: That's correct. Not completely, but —
Q: Which is essentially what you did in your first declaration, except that you viewed it. I take it that's the difference or is there other differences?
A: No, that was the primary difference.
Q: Did you decrypt the entire movie when you did it for your first declaration?
A: I don't remember exactly. I may have only done one VOB.
Q: Okay. All right. So then the question is, is that the only three times — those three times are the only times you've used DeCSS?
A: Right. And the answer is, no.
Q: Okay. On what other occasions have you used DeCSS?
A: I have also used DeCSS in an internal

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development project.
Q: And internal to whom?
A: Internal to Cinea.
Q: Can you tell me something about it?
A: Cinea is developing and has developed an MPEG analysis tool for the analysis of MPEG video streams. And we, as part of our testing process — and partially because I hadn't watched a movie yet either to make sure it was, in fact, decrypted — took DeCSS and ran it against a DVD that had been decrypted.
Q: You used it to decrypt a DVD?
A: I used it to decrypt the DVD and then ran the MPEG analysis tool we had developed against the resultant output file.
Q: On the plain text file?
A: On the plain text file, that's correct.
Q: Okay. And did you get permission to do that?
A: I did not get permission to do that, no.
Q: Did you ask Proskauer if that would be okay?

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A: I did not ask Proskauer if that would be okay.
Q: Okay. What movie did you use?
A: Again, I don't remember the movie. It might have been The Matrix, it might have been — we have about two or three movies laying around.
Q: Okay. Did you decrypt the entire thing or just one VOB file?
A: I think in that case I decrypted the whole thing.
Q: And was your — the reason you did it, I take it, was as part of testing this MPEG tool that you were working on?
A: That's correct. As part — it was an opportunity to run one test. And we did most of our tests, all the other tests against normally available or open disks.
Q: I.e., DVD —
A: Non-CSS encrypted disks.
Q: How many non-CSS encrypted disks are there?
A: I don't know the exact number.
Q: How many have you found?
A: I haven't done an exhaustive study.

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I know looking through these logs there were 20 some odd identified disks in these logs.
Q: Okay. Do you know if there are any more than 20 some odd?
A: I'm sure there are more than 20.
Q: Why?
MR. MERVIS: Why is he sure?
MR. HERNSTADT: Yeah.
A: I guess I shouldn't say I'm sure. I have no reason to believe there aren't more than 20.
Q: Why not?
A: Because it is — to my understanding — again, I don't have knowledge of CSS licensing, but I believe there is an additional cost to CSS-encrypt movies. And I'm sure some producers — and clearly some have — have opted not to pay those fees.
Q: Okay. Are these — the 20 some odd movies that you saw that were non-CSS, were they American movies or were they foreign movies?
A: I have not necessarily personally seen all of those movies. Again, those were —

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Q: The titles.
A: — titles I extracted.
Q: Right.
A: They were a combination of U.S. and foreign movies.
Q: To your knowledge, were any of them public domain movies?
A: No.
Q: Are you aware of public domain movies being encrypted with CSS?
MR. MERVIS: Go ahead.
A: Not to my knowledge, but I have —
Q: Okay.
A: I don't know.
Q: Okay. So in any event, your statement that you believe that there's more than 20 some odd non-CSS DVDs is based on — is a deduction or —
A: Yes, I guess an educated guess.
Q: An educated guess, okay. Does this tool analyze — the Cinea tool that you're working on, is that an MPEG 2 analysis tool or does it analyze any MPEG?
A: It is an MPEG 2 analysis tool.

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Q: Does it work on MPEG 4?
A: I don't believe it would work effectively against MPEG 4 streams.
Q: Okay. And what did it tell you about the MPEG 2 stream?
A: It looks at the structure of the compression, looking for errors, significant errors in the structure which could actually lead to playback issues.
Q: Okay. Is this part of — is this a security tool or —
A: No.
Q: Okay. Is this a quality assurance tool?
A: It's a quality assurance and analysis tool.
Q: Okay.
A: Which would be used by post houses.
Q: Now you're doing — Cinea is working on another project for Proskauer; is that correct?
A: Not actively. We have.
Q: Okay. And are you working actively on any projects for the plaintiffs, any of the

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plaintiffs?
A: No.
Q: Okay. I think the last time we spoke you were engaged in some other project and I take it that's concluded?
A: That's now concluded. There's no active work going on.
Q: Does that other project have anything to do with DVDs?
MR. MERVIS: I guess you can answer that yes or no.
A: No.
MR. HERNSTADT: Okay.
Off the record.
(Discussion off the record.)
Q: Okay. Do you — apart from yourself, do you have any knowledge of anyone using DeCSS to decrypt and then view a DVD?
A: In addition to any discussed in our previous — in my previous deposition?
Q: Let's just — let's ignore —
A: We covered this ground.
Q: Well, actually we didn't. You were not — you didn't answer — you weren't permitted

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to answer the questions.
THE WITNESS: Okay, I'm sorry. Can you repeat the question.
MR. HERNSTADT: That's why I'm going into it.
MR. MERVIS: Can you read it back?
(Record read.)
A: To decrypt and then view, I have ancillary. I mean, I have ancillary knowledge, not personal knowledge.
Q: Are you talking about looking on an Internet Web site where someone claims to have done that?
A: Yeah, and newspaper articles where people talk about having done it.
Q: Okay. Anyone at any of the plaintiffs or the MPAA?
A: No.
Q: Okay. Now, let me just ask you quickly about Schumann Exhibit 2. This is the Linux development logs and the —
What's the other one, the Livid?
A: Livid. I think Livid Dev and Linux DVD were the primary components of that.

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Q: Okay. Is all your knowledge about DeCSS based upon your review of these logs?
MR. MERVIS: About — I'm sorry. I missed it. Can you read it back?
(Record read.)
MR. MERVIS: Go ahead. You can answer.
MR. HERNSTADT: You know what, let me refine it.
THE WITNESS: Right. Can you refine that a little bit? I mean —
Q: Yeah. Let's start easy: All of your knowledge about the creation of DeCSS.
A: Thank you. Yes. Yeah.
Q: Okay. And all of your knowledge about the involvement of anyone associated with writing Linux programs for a Linux DVD player; is that derived out of these logs?
A: Yes. It's all — yes. It is all based — yes, that's correct.
Q: And all of your knowledge about CSS-auth and CSS-cat, does that come out of these logs?

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A: No. I have additional knowledge, having been able to look at the source for CSS-cat and CSS-auth.
Q: Where did you look at the source? "The source," you mean source code, right?
A: The source code, correct.
Q: Okay. What's it written in?
A: If my memory serves, they're written in C. And I downloaded the source code from the Internet.
Q: Where did you get it?
A: I actually don't remember. I went on — probably went on 2600 and downloaded. Many of the sites on 2600 that have DeCSS also have CSS-cat.
Q: You went to the windows, the list of windows and —
A: Yes.
Q: Okay. And you found it in both source code and executable or only in source code?
A: I didn't do an exhaust study. I was looking for the source code and I downloaded the source code.

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Q: Okay. Was it difficult to find?
A: Not with the knowledge of how I understand where all this stuff is, based on this case, no.
Q: If you didn't go to, say, 2600, what would you normally do if you wanted to find CSS-auth?
A: If I wanted to find CSS-auth?
Q: Yeah, the source code for CSS-auth. Normally what would you do if you didn't have an address that you thought might lead you to it?
A: I would likely type it into a search engine.
Q: Did you ever try that?
A: I imagine some — I'm sorry, "I imagine" might not be the right word. But it is likely that I have typed that into a search engine at some point in this process, yes.
Q: Okay. And do you know if that resulted in your getting to a web site with a CSS-auth and CSS-cat?
A: Actually, let me that back. I don't know if I ran a search engine for CSS-auth in

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particular.
Q: Well, how about DeCSS?
A: DeCSS I would likely be more comfortable.
Q: Did that take you to a Web site where you could find the source code and/or the executable for DeCSS?
A: I believe it did, but I didn't —
Q: Okay. What programming languages are you conversant in?
A: I was wondering what term you were going to use.
MR. MERVIS: Can you read?
A: C, BASIC, Pascal from a long time ago. C++ to a certain degree, some Java.
Q: And can you write programs in C and C++?
A: Yes.
Q: And do you do that with any frequency?
A: Not that much anymore. I used to with a lot of frequency.
Q: Okay. So if you were to look at a program in C you could read it and you'd understand what it said?

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A: That depends on the program.
Q: Okay. Can you read — Well, what does an object code mean to you?
A: Object code is a machine-executable — typically, a machine-executable form of a program.
Q: Does that — if you were to buy a computer program at a Egg Head Software would the program that comes on the disk, let's say, be an object code; is that what you're talking about?
A: It would be right in object or executable form.
Q: What's the difference between object form and executable form?
A: This is really a nuance. But in larger development projects you will have multiple source files. Those source files will be compiled into what's called object form. And then those modules in object form will be combined in what's typically called a linking step to form a single executable.
Q: So object code is after being compiled, but prior to being linked?

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A: In a very rough way. I mean, there are languages where that's different and modern systems where you have DLLs, you're actually linking them dynamically as you load them. I mean, it's a simplistic older view of the world. It's a little bit more less straightforward today.
Q: In other words, object code could be a variety of different things?
MR. MERVIS: Well, I object to the form of the question.
You can answer.
A: An executable program can be delivered ether as a single piece of object code linked together or today, oftentimes it comes as a series of object code modules, as well as, perhaps, an executable program.
Q: Okay. What is source code?
A: Source code is the — to my under — I guess, definition, the original language in which the program was written.
Q: Okay. So if you write a program in machine language, then the source code would be the same as the object code?

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A: Yeah, that's correct.
Well...
I shouldn't answer so fast.
The — if you — are you referring to assembler or machine language?
Q: Let's do one and then the other.
Let's say assembly language first.
A: Okay. Assembly language is a source code language where the instructions of the machine are in a human — what I'll call a human-usable format. In other words, they're in text. You can edit and understand, and look at and write and create.
And machine and that — those instructions then get what's called assembled into the object code equivalent.
Q: Are they — is this — is that with something, a program assembles them?
A: It's called an assembler.
Q: So that's similar to a compiler?
A: Exactly. It's logically similar to a compiler.
Q: Okay. And what if — okay.
And what about machine language?

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A: Machine language, again, is the equivalent of, in fact, is identical to object code.
Q: Is that ones and zeros?
A: Man, they're all ones and zeros. The English gets described inside the computer as ones and zeros also. It's the native language of the machine that is executing the program, if you will.
Q: When you put source code through a compiler —
A: Yes.
Q: — what comes out is Xs and zeros; is that correct?
I mean, ones and zeros.
A: What comes out is essentially ones and zeros, yes.
Q: Okay. Now, can you read object code? Using the object code to mean machine language, binary, ones and zeros.
MR. MERVIS: "You" meaning the witness?
MR. HERNSTADT: "You" meaning Mr. Schumann, yeah.

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A: Can you —
MR. MERVIS: Can you, Rob Schumann.
THE WITNESS: Yeah, I understand.
A: Can you clarify what you mean by "read"?
Q: Can you look at it —
Well, let me ask you this: Do you ever look at object code in order to understand something about a program?
A: Not in the normal form of operation, no.
Q: Okay. So when I say, "can you read object code" what I mean is, can you understand it?
Can you look at object code or a computer program as represented in the object code format or language and understand — and draw an understanding from that?
A: I, personally, as can others. It is possible to do that, but it is a very tedious and complex, and unrewarding process.
Q: Okay. But you can do it?
A: It is possible.
Q: I'm not asking if it's possible. Much

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that you may want to look at it. I don't know if we — I guess we have marked it.
MR. HERNSTADT: Schumann 3.
MR. MERVIS: This one.
A: I know in my —
MR. MERVIS: Read it first, Rob, before you answer it.
THE WITNESS: No, it's the supplement — 3 is the supplement. 3 is not my first one. I don't have my first one here.
MR. HERNSTADT: No, 3 is number — is the June — January 19th.
THE WITNESS: Oh, supplemental. I'm sorry.
No, this is — this one, 3, is marked as the supplemental declaration to modify the one of the 19th.
MR. HERNSTADT: Ah, okay.
Oh. Well, then I've got the — Here. Well, let me make this 6. This is the — oh, shoot, I can't give you this one.
MR. MERVIS: I have a copy if — you

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know, I don't mind expediting the process.
THE WITNESS: I mean, I have one here, too, so I know it's unmarked.
Q: Well, actually, I note that in your January 19th declaration —
A: Yes.
Q: — you say that as far as you know there isn't yet.
"So, to the best of my knowledge, there does not exist a fully functional Linux DVD player."
A: Yeah, that makes sense.
Q: Right.
Give me a second here. Did we...
Okay. Let's move on.
I think I've got that question somewhere else.
Do you know if LS DVD has finished a DVD player?
A: LS was the other DVD development group, the Linux development group?
Q: You tell me.
Is that your recollection?
A: I would have to look at my — look at

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my —
Q: Okay. That's Paul Volcko's group.
A: Paul Volcko's group. Again, I have no current knowledge of whether or not any of these development groups have completed players or licensing terms.
Q: Okay. And who provided you with the documents — the logs that are collected in Schumann 2?
A: Mark Litvack of the MPAA.
Q: Okay. And who did the selection of which postings would be provided to you?
A: I have no knowledge of that.
Q: Okay. They came to you separated out already?
A: Yes.
Q: Okay. I think you said that you believed that these were the ones that were relevant to this case, that's why — that's was the basis of the selection of the postings?
MR. MERVIS: Wait.
Let me just object to the form of the question.
MR. HERNSTADT: Okay.

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MR. MERVIS: You can answer, if you understand.
A: No.
Q: Okay. Do you have any understanding as to the — what — why you were given certain postings, but not all postings?
MR. MERVIS: Note my objection to the form of the question.
You can answer.
THE WITNESS: I'm sorry, can you repeat both of the last two questions.
MR. HERNSTADT: Just the last one.
MR. MERVIS: Well, you don't need the second to last. I mean —
Actually, you know, if he wants to hear it, he can hear it.
THE WITNESS: Yeah, I would like to hear the second to the last, is all, just to clarify.
(Record read.)
A: I do not. I have no firsthand knowledge of why this subset was selected.
Q: Okay. Did you ever review — did you ever go to the Web sites and review the other

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postings that you were not provided with?
MR. MERVIS: I object to the form of the question.
You can answer.
A: I have gone into these archives.
Q: Uh-huh.
A: And have looked through some other postings. And this, to my cursory examination, would appear to be a reasonably relevant set of postings to the task I was asked to undertake.
Q: Okay. When did you do that?
A: I did that prior to my third deposition.
MR. MERVIS: Declaration.
Q: Declaration.
A: Declaration, excuse me.
Q: So sometime in May, would you say?
A: I guess it would have been May. I don't know.
Q: Okay. And you described it as "cursory."
Could you describe it in more detail: How long did you spend looking through archive postings?

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A: I spent — I mean, I probably spent eight or ten hours going through archive postings, but not —
Q: I mean apart from —
A: No, no, no, apart from this.
Q: Right.
A: But not looking — at the time I was looking for references to material, not trying to understand — not trying to correlate what I received to what was there.
Q: What were you looking for?
A: I was looking for materials that were relevant to my third affidavit and were supporting — essentially supporting materials, or relevant materials to my third affidavit.
Q: Okay. What specifically were you looking for?
When you say — first of all, when you say "materials" do you mean postings or do you mean links in the posting?
A: No, no, postings. The text in the postings.
Q: Okay. And what text were you looking for?

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THE WITNESS: I would have to look at my third affidavit, if I may take a moment.
(Witness looks at document.)
MR. MERVIS: And you're looking at, just for the record, Schumann 5.
(Witness looks at document.)
MR. MERVIS: You know, as I look at this I'm not sure this is the right one. But we don't have the exhibits.
MR. HERNSTADT: It doesn't have the exhibits attached.
THE WITNESS: Yeah, this doesn't have the exhibits. But I can — let me finish going through it.
MR. HERNSTADT: You should feel free to show — Mike, you should show him the exhibits if you want to.
MR. MERVIS: Yeah, let me — well, it might speed things up.
MR. HERNSTADT: I don't have a problem with that.
MR. MERVIS: It might speed things up.
MR. HERNSTADT: Yeah. I'm trying to find out what he was looking for. And if

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this will assist in answering the question, feel free.
Just don't give him the notes with the notes on it.
MR. MERVIS: About what to say?
MR. HERNSTADT: Yeah: This is how you answer this question.
MR. MERVIS: Uh-huh.
As I seem to recall, this as being Exhibits B and C of something.
THE WITNESS: Well, the first — we certainly went through it on the first time. But the first time I know I went through the paper itself.
MR. MERVIS: Well, here's the — here — this is the second —
MR. HERNSTADT: This is the June 1st?
MR. MERVIS: This is —
THE WITNESS: No, that's the second one.
MR. HERNSTADT: That's the —
THE WITNESS: The Second Supplemental Declaration is the title.
MR. HERNSTADT: It's the Second

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Supplemental Declaration.
MR. MERVIS: Yeah, this is it, Second Supplemental. So if you want to, you can look through my copy of the exhibits.
THE WITNESS: Okay.
MR. HERNSTADT: Can I look over your shoulder at the exhibits, do you mind?
MR. MERVIS: Yeah. I don't think I have any markings on them.
The exhibits are all attached at the end.
THE WITNESS: Oh, I see. Got you. Okay.
MR. HERNSTADT: The secret of Oz.
THE WITNESS: Yup.
This would be one of the examples. This — yeah. One of the items we searched for were DVD — examples of DVD disks, unencrypted DVD disks. I had a memory that they were referenced, and so that was part of what I searched for.
MR. MERVIS: And you're referring —
THE WITNESS: Examples of that.
MR. MERVIS: — you're referring to

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Exhibit 11 to the second —
THE WITNESS: Yes, Exhibit 11.
MR. MERVIS: Thank you.
A: Where they talk about what DVDs they have found.
And, in particular, this exhibit also talks about that you can do the development without the need for CSS. In other words, that there are examples of non-encrypted movies that you can use to develop the remainder of the DVD — that they could use to develop the remainder of the DVD player.
Q: That's on the first page, right?
A: Yes.
As the text says, "as far as your efforts, you may consider trying to get unencrypted DVD playback working first. This will let you concentrate on the video and sound-related issues, first." The reply is, "a very good idea." And it goes on and says, they don't have it in unencrypted. And there's a question: Well, what disks are unencrypted?
Q: Is that answered?
A: That is answered, I believe, in,

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perhaps, some of the following pages. If not, I know it's answered in here.
And then there's another attachment in here somewhere that talks about the disks that are unencrypted.
Q: Okay.
A: Okay.
Q: So one of the things that you were looking for in that — in addition to reviewing the postings that were given to you by the MPAA, when you went back into the archives you were looking for examples of people using DVDs?
A: Yeah. Well, in particular I was searching — right. I was searching for people who were not using DVDs, but who were looking for references to unencrypted DVDs to help compile the list of unencrypted DVDs, as well as examples where the participants highlighted that, in fact, you don't need to do DeCSS to develop the rest of the DVD player, that that's only a very small portion of developing an overall DVD player.
Q: Did you compile a list of unencrypted DVDs?
A: I compiled a list from that exercise,

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yes.
Q: Okay.
RQ MR. HERNSTADT: Could we get production of that list?
THE WITNESS: I believe it is in this — huh, interesting.
If it's not an exhibit, then we certainly can.
MR. MERVIS: If we have it, that sounds fine.
THE WITNESS: Yeah.
MR. HERNSTADT: And Mr. Schumann, if you can find that, I'd like to get that produced.
THE WITNESS: Absolutely. I thought it was in here already. If it's not, it's no problem.
Q: Okay. You just said that DeCSS is a small part of —
A: Uh-huh.
MR. HERNSTADT: Could you read back his answer where he says, "DeCSS was a small part."
(Record read.)

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Q: Okay. DeCSS is only a small portion of developing an overall DVD player; what do you mean by that?
A: What I mean by that is to —
MR. GARBUS: Excuse me, can I hear the question again?
MR. HERNSTADT: Off the record.
(Discussion off the record.)
A: If you — to build a DVD player that can play back all of the existing published DVDs it is necessary to implement the CSS decryption algorithm within the player.
Q: Okay. You have to decrypt that which is encrypted?
A: Before you can perform the rest of the DVD processing, okay?
Q: Okay.
A: However, that is a very small part of a complete DVD development effort — or DVD player development effort.
Q: Okay. What percentage would you say, 25 percent, 50 percent?
A: Maybe .1 percent.
Q: .1 for decryption?

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A: Yes.
Q: And the authentication?
A: Is included in that.
Q: Okay. Now, is there information freely available about the rest of what's required to develop a DVD player?
A: The specifications for the DVD specifications that are necessary to create a DVD player are freely licensable from the — I think it's the DVD Forum is the official entity.
Q: Okay. But is that information also available, if you don't want to get a license, can you get that information anyway?
MR. MERVIS: Well —
Go ahead. You can answer.
A: Can you — do you need — can you clarify, please, what you mean by "license"?
Q: Well, you just mentioned that the specifications were available from a licensing entity, the DVD Forum is what you thought it was.
A: That's — it is possible to get the specifications without getting a manufacturing license.
Q: Okay. How do you know this?

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A: I have applied to that forum in the past and have had access to those documents in the past.
Q: Did you apply to find out what the process was or because you wanted to make a DVD player?
A: We were making DVD players or DVD playback — we were putting content into DVD playback environments.
Q: Was this when you were working on the Divx?
A: That's correct.
Q: You went to your competitors and applied to get their specifications?
A: The Divx technology was a feature of a DVD — our movies were DVD movies with a different security system.
Q: That was half in jest, you see.
A: Yes, I understand.
Like I said: They had to freely license it, even to us.
Q: Yeah, fair enough.
Would you say that the decryption is the hardest part of building a DVD player?

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A: Absolutely not.
Q: Why not?
A: It is a very small portion of the technology that must be implemented to build an overall DVD player.
Q: All right. Now, I'm talking about an open-source DVD player where you don't get up — you don't go and get a license for CSS. So you have to decrypt the CSS somehow, right, in order to play a DVD?
MR. MERVIS: Object to the form of the question.
A: I'm sorry, I don't understand and —
Q: I'm referring to the Livid project, which was an open-source Linux-based DVD player that was going to be built without getting a CSS license.
Okay? Now referring to that player —
A: Yes.
Q: — is getting to figuring out a way to decrypt the movies the hardest part of building the Linux player?
A: No.
Q: Okay. Why not?

A: Because the — in order to create a DVD — and by "DVD player" I assume you mean an equivalent to a purchased DVD player in functionality.
Q: Yeah. A DVD player that will play DVD movies that are equipped with Linux — I mean, CSS.
A: And with all of the features of the DVD, functional equivalent of like InterVideo's DVD player, yes?
Q: Sure.
A: It is — decrypting the movie is a very small portion of the overall task.
Q: Trivial, nontrivial, as that word is understood as a term of art, among you folks.
MR. MERVIS: I object to the form.
A: Can you clarify what you have or do not have specifications for?
Q: You have specifications for none of it.
You do not have specifications for the authentication and decryption part of the DVD player. Let's assume that you've gotten the specifications that are available for all the

rest of it.
A: For all the rest.
It's still a trivial — it's not a trivial, but it's still a very small percentage of the overall task.
Q: Okay. And that's in terms of the amount of work. Is that true also in terms of the difficulty of the work?
A: Yes.
Q: Okay. You have stated several times — oh, wait. Let me move back for a second.
You stated in your original deposition that you had no knowledge of a movie being shown on the Internet that was derived from a DVD by means of DeCSS, that was in your May 15th deposition.
A: No personal, yeah, no personal knowledge.
Q: Yeah.
Is that still the case?
A: No personal knowledge, yes.
Q: Have you looked on the Internet to see if movies were available via the Internet?

MR. MERVIS: Okay. You can answer it.
A: I have done, I believe I did a search once with, I think it was Gnutella.
Q: Okay. These questions are essentially since we last spoke.
A: Yes.
Q: You know, I don't want you to repeat what you told me the first time. Just to be very clear about that.
What did you find? You did a search with Gnutella for what, looking for movies?
A: I think I typed in "The Matrix."
Q: Okay. Did you find it?
A: I found a variety of examples came up on a screen.
Q: And what were they?
A: They were a list of different — I mean, it doesn't tell you a lot.
Q: Does it tell you the source of the movie?
A: It does not — I don't believe it tells you the source of the movie —
Excuse me, can you clarify "source"?
Q: I mean, where it came from.

What was the — was the movie derived from a videocassette, was it derived from a laser disk, was it derived from a VCD, from a DVD, from a camcording?
What was the source of the movie that's being offered on the Internet?
A: Only to the extent that the description includes that information.
Q: Okay. And what were the sources that were included?
A: I don't remember all the sources. I believe there was one that had DVD in that description.
Q: And how big a file was that?
A: It was hundreds of megabytes.
Q: One, two —
A: I don't remember exactly. I mean, I was not —
Q: Did it say anything else, about what it was?
A: No. It was like the title — and again, I don't remember the exact description. It was the title and it had "DVD." And there was some description that claimed that it might have

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come from a DVD.
Q: Right.
Did you check it out?
A: No, I did not check it out.
Q: Okay. Did you print the screen?
A: I did not print the screen.
Q: Did you tell the plaintiffs about this?
A: I did not tell the plaintiffs about this.
Q: Did you tell the MPAA about this?
A: I did not tell the MPAA about this.
Q: Okay. Now did — had anyone — you say you have no personal knowledge of a movie being shown on the Internet that originally came from DVD —
A: That's correct.
Q: — by means of DeCSS.
Has any of the plaintiffs told you that they've — that they're aware of that?
MR. MERVIS: Don, can you give me back that question?
(Record read.)
MR. MERVIS: Aware of what?

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Oh, I'm sorry.
MR. HERNSTADT: Do you understand the question?
MR. MERVIS: Yeah, I got it.
MR. HERNSTADT: I think Robert and I —
MR. MERVIS: I know you're having a good time.
Go ahead.
A: I have no knowledge.
Q: Does that mean, no, none of the plaintiffs have told that you?
A: No — correct, none of the plaintiffs.
Q: And the MPAA hasn't told you that either, right?
A: That's correct.
Q: Okay. You've testified a couple of times in your deposition and in declarations that DeCSS — in sum and substance. I'm not trying to quote you or tie you to anything. I'm going to ask you about all of this.
"DeCSS does not permit a purchaser of a DVD-conveyed region coding and does not permit a purchaser to fast forward through sections of a

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DVD that the manufacturer had prevented fast forwarding through; is that correct?
Is that your testimony?
THE WITNESS: Can you reread that question?
MR. HERNSTADT: I'll tell you what: I will do you —
THE WITNESS: I'm sorry. The wording is —
MR. HERNSTADT: I'll do you one better. I'll read it from your deposition.
THE WITNESS: Okay.
Q: Okay. The question to you was:
"Question: Does DeCSS permit a consumer who has purchased a DVD to fast-forward through sections of a DVD that the manufacturer has prevented from being fast-forwarded?
"Answer: DeCSS itself?
"Question: That's my question.
"Answer: No.
"Question: Does DeCSS enable someone to use" — a DV — someone with — "to use with some other program like a DVD

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player" — I don't understand this question either — "to skip the region code?
"Answer: I think it is irrelevant to that problem.
"Question: You think DeCSS is irrelevant to that problem?
"Answer: To the problem of evading region code?
"Question: Yes.
"Answer: Yes."
Okay. Is that — do you adhere to that testimony?
A: Yes.
Q: Okay. What do you mean when you say you think it's irrelevant to that problem?
A: The implementation of the region code checks occur as part of the DVD specification and not as part of the CSS subsystems.
Q: Okay. What does region coding do — strike that.
I take it that region coding ensures that a DVD player from Region II won't play a DVD from Region I; is that the case?
A: Won't play a DVD marked for playback

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only in Region I.
Q: Right.
A: Yes.
Q: Okay. Now, isn't it true that if you take that Region I disk, decrypt it using DeCSS and then play it, the region code prohibition will not be effective?
A: That's not true.
Q: Okay. Is that universally untrue or is that only untrue with respect to certain machines?
A: That, to my knowledge, a correctly implemented DVD player would still enforce the region code.
Q: Okay. Do you know the RPC, do you know what that is?
A: No.
Q: Or RP1 and RP2?
A: I'm sorry, I don't know those by — not offhand. I mean...
Q: Okay. Let me ask you this: Are there machines where that would be the case?
In other words, that a decrypted DVD would be able — would play no matter what the

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region code on the DVD?
A: There — that's possible. But they might also play them if they're encrypted.
In other words, again, I don't believe the two are related.
Q: All right. I'm saying that you've got a situation where you have an encrypted DVD that's for a different region, for playback in a different region than the DVD player.
And my question is: If it's decrypted with DeCSS will it play?
And you're — you say, no, it won't. And my question then is: Is that always the case?
MR. MERVIS: Meaning regardless of what player is being used?
MR. HERNSTADT: Uh-huh.
A: Yeah, I mean that — that depends on several factors.
Q: Uh-huh.
A: It depends on the nature of the player that's used. It depends on how the disk is put — how the content is given back to the player and whether or not the content is edited

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after it's been decrypted.
MR. HERNSTADT: I'll ask you to take a look at what's marked as Schumann 6, which is the declaration — Reply Declaration of Frank Stevenson.
(Schumann Exhibit 6, copy of multipage document entitled Reply Declaration of Frank Andrew Stevenson in Support of Defendants' Cross-Motion to Vacate the Preliminary Injunction, marked for identification, as of this date.)
Q: I'd like you to look at paragraph 9. Well, first, have you seen this declaration before?
MR. MERVIS: Just take a minute to look at it before you answer.
(Witness looks at document.)
A: This is Mr. Stevenson's second declaration?
Q: Yes.
A: Yes, I believe I've seen this before.
Q: Okay. Would you take a look at paragraph 9. And I'd like you to read through that and then tell me if paragraph 9 is correct.

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If the statements in paragraph 9 are correct.
If you would be prepared to adopt that.
(Witness looks at document.)
MR. HERNSTADT: Let's go off the record. He's going to flip the tape.
MR. MERVIS: Okay.
THE VIDEOGRAPHER: The time is 2:55 p.m. This is the end of tape No. 1 of the continued videotaped deposition of Robert Schumann.
(Recess taken.)
THE VIDEOGRAPHER: The time is 3:06 p.m. This is tape No. 2 of the continued videotaped deposition of Mr. Robert Schumann.
MR. HERNSTADT: Okay. Can you just read back that last question. Don, if you would, please.
I give you a menu of options.
(Record read.)
MR. MERVIS: Before you answer let me just make a point. And I don't mean to —
MR. HERNSTADT: Please.

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MR. MERVIS: But there are roughly five sentences in that paragraph, none of which mean very much to me.

But before you adopt it or not adopt it in whole, I mean, to the extent that they're separable, you may want to take that it way.

MR. HERNSTADT: I'm going to let —

MR. MERVIS: However you want.

MR. HERNSTADT: — Mr. Schumann tell me that — if there's any sentence in there that's incorrect or if it's all incorrect.

A: I was — in fact, my response is: I don't agree with the entirety of what is described here.

Q: Okay. Every part of this is wrong?

A: No, that's not...

Q: Okay. Let's do it sentence by sentence then.

Is the first sentence correct?

MR. MERVIS: And even then there presumably could be portions that are and portions that aren't.

Q: "The great majority of DVD drives

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installed in computers today are RPC-1 drives"; is that true.

A: I am fine from the "I would like to note that the great majority." Would disagree with regards to DeCSS as a means to bypass.

Q: That's okay.

A: Okay. I agree that the great majority of DVD drives are RPC-1 drives.

Q: Okay. Is it true that "RPC-1 drives leave it to the player software to enforce region codes"?

A: That is correct.

Q: Okay. Is it true that "DeCSS.exe pays no attention to the reported region code, and will be able to access a DVD disk, regardless of which region it was coded for."

A: I have no reason to believe that that's false.

Q: Okay. "In the output from DVD.exe these region codes are stripped, so there is no regional coding information available to enforce."

MR. MERVIS: I think you've misspoke.

MR. HERNSTADT: What?

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MR. MERVIS: You said DVD.exe.

MR. HERNSTADT: Yeah, it's exe. I —

MR. MERVIS: DeCCS.exe.

MR. HERNSTADT: Oh, what did I say?

MR. MERVIS: You said DVD.exe.

MR. HERNSTADT: Oh. I totally misspoke, yes. DeCSS.exe.

Q: "These region codes are stripped, so there's no regional coding information available to enforce, even for a licensed player."

A: This is the part I don't believe I agree with.

Q: Okay. Why don't you agree with that? Is that — you're saying that that's not true, that DeCSS.exe, the output from DeCSS.exe does not strip the region codes?

A: I have no — I have two issues with this.

Q: Okay.

A: No. 1, region codes are not stripped. Merely you mark which regions are allowed for playback, okay?

The disk by definition — a DVD stream, by definitions, has regions enabled. You

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mark which regions it can or cannot play in.

Q: "You" being the content provider?

A: You being the content — whoever creates the content. It is part of the structure of the — part of the DVD structure.

Q: I'm sorry.

Is it part of the information that's put on the disk or is it part of the information that's already on a disk when the movie is put on a disk?

A: It's part of the information that's in the image put on — in the digital image put on the disk.

Q: Okay. So you're saying that it can't be stripped out?

A: It — it can't be stripped. It could be modified, but it wouldn't be stripped.

Q: Okay.

A: Okay?

Secondly, I have no reason to believe that DeCSS modifies those region codes.

Q: Do you know where in the DVD information the region code is found?

A: If memory serves me correctly — and I

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would have to check the DVD spec, which I do not currently have legal access to, as Cinea is not a licensee of the DVD spec right now.
Q: And that's the DVD Forum?
A: The DVD Forum, correct.
It is stored in two places in a movie — I take that back. It is stored in two structures within the movie. It is stored in the kind of the envelope of the disk, if you will, or the header of the disk.
Q: Okay.
A: But I believe it is also stored in every sector within the disk.
THE WITNESS: Sorry, I forgot to turn that off. Okay.
Q: Okay. And when you decrypt a DVD using DeCSS do you decrypt every sector of the disk?
A: I don't believe every sector is de — is CSS-encrypted. I think only a percentage of the sectors are encrypted.
Q: Okay. And do you decrypt the headers?
A. I believe the headers of the sectors are also in the clear. Are, in fact, not

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decrypted.
Q: Okay. So that's why you disagree with that.
Okay. What about the next sentence: "The Licensors of DVD drives are aware of this loophole in the region codes enforcement, and for this reason the newer drives of type RPC-2 enforce regions codes internally."
A: I agree with that.
Q: Are you — how about the next sentence, "firmware upgrades to RPC-2 drives that will make them RPC-1 compatible"?
A: I have no reason to doubt that that is not true.
Q: Okay. So it seems to me that the particular part that you disagree with is that region codes are stripped. And I guess that that means that you think that that would make you disagree with the entire paragraph, because that's sort of an essential part of this; is that correct?
A: If the sentence that talks about DeCSS in relationship to region codes is stripped, which is, I guess, the third sentence of this, or

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the third and fourth sentence of this paragraph, I am fine with all the rest of the paragraph.
Q: Okay. Let me be clear: Do you — "the output from DeCSS.exe," this sentence says, "these region codes are stripped," that part you disagree with.
How about the next part of the sentence, do you disagree with that as well, "so there is no regional coding information available to enforce"?
A: I would disagree with it, again, in that there is always regional coding information. The only question is: What does it say?
Q: And what do you mean by that?
A: Again, it's not something you take out. It's something you mark as on or off. It's not something that's removable. The structure — you'd have to have it in the structure.
Q: Okay. Does DeCSS.exe act to turn off a region code?
A: I have no firsthand — I've never looked at it firsthand, so I can't definitively say yes or no.

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Q: Okay. Have you ever seen CSS procedural specifications?
A: Have I ever seen the CSS procedural specifications?
Q: Right.
A: No.
Q: Okay. Are you — has anyone ever told you or are you otherwise aware that CSS licensees are required to enforce region coding as part of the CSS protocol?
A: I am vaguely aware that that may be a requirement of a CSS license.
Q: Has anyone ever told you that, specifically plaintiffs or MPAA?
A: No.
Q: Okay. Are you aware that Macrovision is also a part of the CSS license and that licensees are required to enforce Macrovision?
A: Again, I have no, no direct knowledge of that.
Q: Okay. Are you aware that the Macrovision and region coding facilities can be turned off in many hardware DVD players?
And by that I mean sort of stand-alone

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as opposed to PC DVD players.
A: I am aware that that is possible in certain cases, yes.
Q: Okay. What's the — Outside of the United States, outside of Region I, which, I guess, is North America?
A: Primarily, yeah. Without Mexico, I think.
Q: Okay. Outside of Region I do you have an understanding of what percentage of hardware DVD players are sold with the region coding and Macrovision — well, let's leave it at region coding — the region coding capability disabled?
A: Sold by who?
Q: Anyone.
A: By anyone?
Q: Yeah. Let's say legitimate sales, not black market sales, if that was what was —
A: Legitimate sales by whom?
By the original licensees?
Q: By licensees. Let's start with licensees and then we'll just go to retailers.
A: I have — I certainly couldn't speak for any of the more ancillary countries, such as

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China and those type of environments. But I believe, other than that, most systems sold by the licensees have those capabilities. It's not a part of the player to allow the consumer to change this.
With the exception of DVD drives, which have a strange system.
Q: I'm sorry, with the exception of DVD drives?
A: Computer DVD drives.
Q: Okay.
A: There is a mechanism in that for those drives, where the drives kind of essentially are over their first five or seven uses, or something like that, learn what region they are. So they're allowed to, I guess, region-shift five times and then they're permanently locked. There's some strange scheme there that allows them to ship the drives everywhere in the world without having to lock them to a region.
Q: Have you ever head of HD DVD?
A: HD DVD?
Q: Uh-huh.
A: I've heard that term used for a

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variety of things.
Q: Okay. What is it? What have you heard?
A: It has been used in a variety of ways to describe high definition or future high definition DVD-type playback systems.
Q: Is that a different format from a DVD format?
A: It is right now an undefined. There is no, to my knowledge, published format or consumer format around that.
Q: Do you know if there's a planned rollout?
A: I'm not aware of any product details at this point, no.
Q: Hold on. By the way, you said — you told us that you'd burned a movie onto a DVD, or you burned something onto a DVD?
A: Onto a DVDR?
Q: Yeah. What was it that you burned onto a DVDR?
A: When I worked at Divx we would build prototype disks of projects we were working on,

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and you would burn those onto a DVDR because it was cheaper than making a physical disk master.
Q: So this — what you burned on a DVDR was like a program?
A: They were lab prototypes.
Q: I'm sorry?
A: They were lab prototypes of disks.
Q: Were they programs? What was the content?
A: It was a combination of programs and audiovisual materials. I mean, it was essentially a DVD.
Q: And who owned the burner?
A: I think — I think at the end we owned a burner. But we contracted out to post houses initially.
Q: "We" being Divx?
A: Divx, yes.
Q: Do you know how much you spent for it?
A: For what?
Q: The burner.
A: The burner was, I believe was $5,000, somewhere around there when we bought one.
Q: Okay. What happened to it?

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A: The burner?
Q: Yes.
A: Who knows.
Sitting in a closet somewhere,
probably.
Q: Is there today a dominant standard for
DVD burners and writable DVDs?
A: There are a variety of standards.
Q: Okay. Is there an anticipated time
when there will be a single standard?
A: The industry is making progress, in
particular, around ensuring playback of all of
the standards.
Q: Okay. Do you know when we're going to
have a single standard?
A: Again, it's more the playback of the
multiple standards. I believe in the last
several weeks I saw in one of the industry
magazines that the DVD Forum had announced that
drive manufacturers would have to support the
four or five current defined formats in the
future drives.
Q: Have the drive manufacturers agreed to
that?

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A: Yeah, they are part of the DVD Forum.
Q: Okay. So when is this anticipated —
at that point you mean each player will play any
different — any of the different formats that
are out there?
A: Right.
The formats defer, essentially, in how
they lay the data onto the disk in a physical
manner.
Q: Right.
A: And then as a result, the capacity
that the disks have and the characteristics.
Q: Right.
A: And above that they share a common
logical format. So they are essentially saying
the drive manufacturers will have to add some —
eventually it boils down to cost — will have to
add some technology to their drives to read all
these different —
Q: And when is that new product going to
roll out, did they announce any kind of
anticipated time when —
A: I know the announcement said — I
believe the announcement said when they have to

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do it. I don't recall offhand. It wasn't —
Q: A year or two years?
A: My guess, it was within a year. It
didn't strike me as unusual when I read it. It
didn't stand out when I read it.
Q: Okay. Now, how much time did you
spend on Gnutella looking for movies?
A: Not long. Fifteen minutes or
something.
Q: And you were looking just for
The Matrix?
A: That was the only thing I looked for.
Q: Okay. And you found several versions
of it?
A: Yeah. I got a whole screen full.
Q: Okay. But you didn't try and download
one of them?
A: No.
Q: Why not?
A: My curiosity — I mean, I did it
purely as a curiosity. And my curiosity was
satisfied that there was stuff out there. I had
no need to go past that.
Q: Was it offered for sale, or for free?

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A: On the Gnutella?
Q: Yeah.
A: It would have been free.
Q: Do you remember?
A: It wasn't — Gnutella is not a system
that offers things for sale. There's no
mechanism even there to buy it.
Q: Do you know Napster?
A: I'm familiar with Napster.
Q: Okay. Did you ever use Napster?
A: Again, in the same way I've used
Gnutella, in terms of: I brought it up to see
what screens it provided.
Q: Is there a charge for using Napster,
for going into someone's computer and downloading
a song?
A: Not to my knowledge, no.
Q: Okay. Do you know if Wrapster, which
you mentioned, I think, in one — did you, in one
of your declarations, Wrapster?
A: Yes, I did. Correct.
Q: Do you know if Wrapster charges for
movies?
A: Again, not —

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Q: Did you ever look at Wrapster?
A: No, other than looking at a description of what Wrapster was and what it did, to the point that I felt I understood what it did, that it made sense.
Q: Where did you find the description?
A: I don't recall offhand, but there are web sites — there was a web side that talked all about it. It was all — it may have been Wrapster.com, for all I know. I don't recall.
Q: Okay. And do they — is there a charge for procuring a movie on Wrapster?
By the way, can you get a movie through Wrapster, or do you know one way or the other?
A: You could certainly, theoretically, use Wrapster to — Wrapster — hide is not the right word. But to wrap a movie to look like an MP 3, using Wrapster, so that Napster would then perform the distribution, could be used for distributing.
Q: Okay. What does Wrapster do? Wrapster make a video file look like an audio file?

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A: Wrapster makes any file look like an MP 3 file, so that Napster will be happy with it.
Q: Okay. Do you know if Wrapster has ever been used on a movie?
A: I have no personal knowledge.
Q: Okay. Do you know if it's capable of being used on a movie?
A: Based on the descriptions that I read, that there's no reason why it couldn't be used.
Q: Is there a size limitation?
A: Not that I was aware of.
Q: Okay. And how long did you spend looking at Wrapster?
MR. MERVIS: Object to the form.
A: I don't know, offhand, how long it took me to find it and understand it, and all that.
Q: I'm sorry?
A: I'm sorry. I don't know offhand. I mean, it was a multiple of hours.
Q: That's the total? I mean, looking at Wrapster itself.
A: I mean, I never ran Wrapster, in the sense that I ran Napster or I guess ran

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Gnutella. I never brought an executable up. I just understood what it did to the point that I was comfortable that I knew what it was.
Q: Okay. Have you ever heard of a DVD movie being decrypted by DeCSS and offered for sale?
A: I have no personal knowledge of that.
Q: Okay. I mean, you say you've seen them offered on Gnutella.
A: I have seen a line item description that included the word or included the implication that it had come from DVD.
Q: Let me ask you this: Are you familiar with other file-sharing technologies, other than Napster and Gnutella?
A: The others, a variety of others.
Q: FreeNet, Scoure, I-Mesh?
A: FreeNet, I think I-Mesh, Scoure, and maybe there's more by now. I don't know.
Q: Is there a charge for the files that are being shared on those technologies?
A: I'm not aware of any charges.
Q: Have you ever used any of those file-sharing technologies?

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MR. MERVIS: Objection to form.
A: I may have brought up I-Mesh, but I don't — I don't recall. I think I tried and it didn't come up, or something like that. It was not —
Q: And you couldn't get it?
A: — ready for prime time.
Q: Okay. Have you ever seen a movie that's been downloaded from the Internet, any movie?
A: I personally have never seen a movie downloaded from the Internet, no.
Q: Okay. Has anyone ever talked to you about the quality of movies, the quality of the video in movies that are downloaded from the Internet, anyone at all?
A: I don't — I don't believe I had any significant discussions about that. But, I mean, I deal in the video industry and I talk to people about compression algorithms full-time. So it's certainly possible I had a discussion with somebody.
Q: Okay.
A: But not directly around analyzing it

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or anything like that.
Q: An — I'm sorry.
A: Analyzing it or anything like that. I know I have discussed the Divx program with people in relationship. And, I mean, I talk about MPEG 4. And we are involved with projects, development projects —
Q: With MPEG 4?
A: That may include MPEG 4. We're not doing them now, we're in discussions.
Q: Okay. I want to come back to Divx. I think you said that the only iterations of DeCSS you've seen have been in Windows-executables; is that correct? Is that true?
I won't ask you to refresh your —
MR. MERVIS: What?
I'm sorry.
MR. HERNSTADT: That the only iterations of DeCSS that you've seen on the Internet are Windows-executable.
A: If my recollection is correct, I have seen DeCSS as an executable program, that's this.
Q: Okay. Have you seen it in source

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code?
MR. MERVIS: On the Internet?
MR. HERNSTADT: Yeah.
MR. MERVIS: All right.
A: I have never seen the source code to DeCSS itself.
Q: Have you seen it available on the Internet?
A: I have seen things that purport to be the source code for DeCSS on the Internet.
Q: Okay. Do you have any reason to think that they're not?
A: Yes.
Q: Why?
A: I have looked at them.
Q: And what have you found?
A: They are — the — if memory serves correctly: They are essentially the equivalent of what is referred in some of this paperwork to as the anonymous source. It is essentially the core of the CSS encryption algorithm or decryption algorithm in this particular case. But it is not the full DeCSS program.
Q: And how many examples of source code

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have you looked at?
MR. MERVIS: Object to the form of the question.
You can answer.
A: I don't recall offhand, but it wasn't — it's not a huge number. It was three or four.
Q: Sorry?
A: Three or four. It was not a tremendous number.
Q: Okay. Is it your testimony that you think all of the examples of source code that purport to be source code on the Internet are not source code?
A: I certainly have no way of guaranteeing that, absolutely not.
Q: How many examples of executable DeCSS have you looked at on the Internet?
A: I probably — I know for a fact I've downloaded three or — I'm sorry. Probably with my other one, nine or ten copies.
Q: Of DeCSS?
A: I've downloaded DeCSS nine or ten times and —

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Q: Okay. From the same source or did you go to different web sites each time?
A: No, different sources.
Q: So it's nine or ten different executables?
A: Nine or ten different downloads.
Q: Downloads. Was it the same program in each case?
A: As far as I can tell. And in some cases they — I know for a fact they are exact copies.
Q: How do you know?
A: I ran a comparison program that compared them.
Q: Okay. And that's pretty typical, where you have a program being mirrored on different sites, that it would be the same program?
A: Typically.
Q: Okay. Cinea helps develop security systems; is that correct?
A: It's part of — yes, it's part of what we do.
Q: Is it a major part of what you do?

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A: It's our primary focus as a company, yes.
Q: Okay. What do you do, in terms of creating security systems, what does that entail?
A: Creating a security system entails a fairly complex process. But it entails a combination of understanding what the requirements are, essentially what you're trying to protect, what the business rules are, what the business requirements are, and what you're attempting to do.
And then you need to — then you go through the process of applying a variety of technologies that you can employ to build an overall security system.
Q: Like what?
A: To meet the requirements of that particular customer or that particular business.
Q: And what are some of the technologies that you would employ?
A: In very coarse buckets, there are things like human physical security.
Q: Like a lock on a door?
A: A lock on a door, putting things in

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file cabinets.
They are encryption algorithms, per se, and encryption routines. They are key management systems for controlling the keys in electronic form. The human is also an example of that.
They are what's called conditional access or I think the modern buzz word is digital rights management. Algorithms for how you get access to things and what time frames.
And then there's auditing. And you put kind of those — pieces of those together and at different — and then there are many different examples. I know each of those faces. And you build what's appropriate to the task being requested.
Q: Do you work with encryption algorithms?
A: I myself am not a cryptologist. I don't write encryption threads.
Q: Do you work with them?
A: I have done designs with them and I understand them enough to know, to a reasonable degree, what's appropriate where and what they

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do.
Q: Have you ever tested an encryption system?
A: Tested an encryption system? I have not tested an encryption system myself, no.
Q: Has Cinea?
A: No, Cinea has not tested an encryption system.
Q: Do you know what's involved in testing an encryption system?
A: I roughly know what's involved, yes.
Q: What?
A: There are — again, it depends on how extensive you want or need those tests to be.
But encryption systems and testing them is a very difficult process.
Q: Do you try and crack a system, is that part of the test?
A: That can be part of the test.
Q: Isn't that sort of a very essential part of the test, to see how strong it is by trying to break through it?
A: It is — analyzing the system to

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understand its strengths and weaknesses is typically part of the testing, part of the design process.
Q: And is it a — is encryption research essentially trying to break encryption systems?
A: It is the art of creating encryption systems and the art and science of breaking them, yes.
Q: Okay. And a lot of cryptographic research involves finding systems and probing them for weaknesses by trying to break them, right?
Or crack them.
A: Some of the research, yes, absolutely.
Q: Okay. And is that good for security?
A: Absolutely.
Q: Is that necessary for security?
A: It is proven — publishing algorithms has proven to be one of the more effective ways of testing algorithms.
Q: Okay. I take it you're not an expert in cryptography and that the plaintiffs are not putting you forward as an expert in cryptography; is that the case?

MR. MERVIS: Well, I mean, I think —
Why don't you ask him the question and I'll...
Not the second question, because I don't think he knows the answer.
A: Yeah, I don't know the answer to the second part.
The first part, I mean, I am not a — an expert in cryptographic algorithms.
Q: Okay. Do you have an opinion as to the strength of the CSS algorithm?
MR. MERVIS: I think — well, I mean, I'll object that it's been asked and answered.
But go ahead.
A: I have an opinion, in terms of CSS is an overall system and its strength in what it was intended to do. Whether in the very esoteric world of cryptographic algorithms, per se, I can't provide, I guess —
I couldn't give you a detailed examination of CSS as an algorithm versus other algorithms, in a very rarefied world.
Q: Okay. Why is that a very rarefied

world?
A: The number of people who have in-depth understanding of algorithms at that level is probably pretty small.
Q: Do you know who Frank Stevenson is? You had his deposition.
A: Yes, I do.
Q: Okay. Is he a cryptographer?
A: Based on what I read, he is knowledgeable about cryptographic algorithms, certain cryptographic algorithms, yes.
Q: Okay. Is he a cryptographer?
MR. MERVIS: Object to the form of the question.
You can answer.
A: I don't know. I don't know how to — I don't know what would make him or not make him a cryptographer.
Q: Is he a professional?
MR. MERVIS: Object to the form of the question.
A: I know he works in the software field, based on his declarations.
Q: Okay. And where he says that he is "a

computer research programmer employed by Funcom Oslo," do you know what Funcom Oslo is?
A: Some company, I guess, in Norway or Sweden, where he lives.
MR. MERVIS: Do you know where Oslo is?
MR. HERNSTADT: I'm not going to ask that question.
Q: Do you know if a 40-bit key is considered a strong or weak encryption key?
MR. MERVIS: Object to the form of the question. Among other things, it's asked and answered.
You can answer.
A: Key length is complete — key length and strength of the key is completely related to the algorithm behind the key.
Q: Uh-huh.
A: So you can't say a 40-bit key is weak or strong.
Q: You can't?
A: Not — not in relationship — not in relation — not without discussing —
Only, only in relationship to the

algorithm itself.
Q: Isn't the — in terms of a brute force attack — do you understand what I mean by that, brute force attack?
A: No. Could you clarify that?
MR. HERNSTADT: No. I'm going to move on.
I think I'm asking you questions in an area that you really don't know enough for me to ask questions about.
MR. MERVIS: Well, that —
MR. HERNSTADT: That was not intended to be insulting at all. It's just meant to suggest that...
MR. MERVIS: Well, I'm not sure that's true. But I guess, you know, it's up to you how you want to —
MR. HERNSTADT: Brute force attack is an absolutely fundamental term of art in cryptography.
MR. MERVIS: It might well be.
MR. HERNSTADT: If Mr. Schumann is unaware of it, that means that what he said before about his experience in cryptography

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being, you know, somewhat limited in certain areas of it, rather than security generally, is fair enough. And I shouldn't — I'm not going to —

MR. MERVIS: That's fine. I understand what you're saying. I guess my only point is that, that's not necessarily something that we agree with.

But you're free to ask whatever questions you want.

There's no question pending, so...

BY MR. HERNSTADT:

Q: Brute force attack is an attack on an encryption algorithm where either a computer or a person will attempt every possible combination of a key in order to find the right one. It's very inelegant. It's brute force: You try every single one mathematically.

A: I wanted to make sure we agreed on what the term meant. I was just trying to clarify that we were both answering the same question.

Q: Okay. Well, I misunderstood your answer.

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So in terms of a brute force attack, that's simply a function of the length of the key, correct?

A: It is a function in terms of the time it would take?

Q: Yeah.

A: It's a function of the length of the key, and thus, the number of keys, as well as the time it takes to use that key.

In other words, the computational complexity of the algorithm itself.

Q: Okay. Do you know how long it would take to — using today's — a powerful computer, a PC, in today's terms, say a Pentium III, you know, 600 megahertz or something like that, how long it would take to break the CSS algorithm using a brute force attack?

A 40-bit using a brute force attack.

A: Using the CSS —

Q: Not CSS. Just a 40-bit key. Mathematically.

MR. MERVIS: I object to the form. You can answer.

A: Again, without giving me a description

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of the actual algorithm that's unanswerable.

Because if the algorithm is that the key is added to the number 66 and you multiply that times the plain text, then it would be extremely fast.

If the algorithm is that the key is multiplied by the number 66 50,000 times and then you multiply it against the byte of plain text, those are radically different computational complexities.

So again, the key is only useful in relation to its algorithm.

Q: Okay. I'm sorry. How about CSS, how long would it take a brute force attack to crack CSS?

MR. MERVIS: Today?

MR. HERNSTADT: Today.

A: I actually can't answer that cause I don't know the — I don't have a number for you. I'm sorry, I don't know the exact number there.

Q: Do you know who Bruce Schneier is?

A: Yes, I do.

Q: Okay. Who is he?

A: Bruce Schneier is a well-known

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individual in the cryptographic field.

Q: Is he one of the leading cryptographers in the country?

A: He's certainly one — probably one of the leading ones.

Q: Okay. If Bruce Schneier told you it would take seconds to crack the CSS algorithm using a powerful contemporary PC, would that surprise you?

MR. MERVIS: I object to the form of the question.

You can answer.

A: Using — can you clarify what type of attack?

Q: A brute force attack.

A: Using a brute force attack?

Q: Yeah.

A: Yes, that would surprise me.

Q: Okay. You said that — in your prior deposition that your review of Linux logs indicated to you that people were playing movies on Linux machines prior to October 1999 and prior to the release of DeCSS; is that your recollection?

sheet to, among others, Marsha King.
MR. MERVIS: Oh, I see.
MR. HERNSTADT: You know, I wish I'd thought of this before I got caught up downstairs, but.
Q: Is this report true and correct?
A: To the best of my knowledge and abilities, yes.
Q: Okay. Before you came here today what did you — did you review any documents?
A: I reviewed some. I briefly went through this report again.
Q: Okay.
A: I went through and reread my deposition — my — not deposition — excuse me, my affidavits.
Q: Did you read the first day of your deposition?
A: I read through almost all of the first day of my deposition, at least cursorily, yes.
Q: Okay. And did you read any other declarations in this case?
MR. MERVIS: Before —
A: Before coming here, in preparation for

this particular —
Q: Yeah.
A: No, I did not.
Q: In the last couple of weeks, let's say.
A: I don't particularly recall any, no. It's possible I was provided one —
Q: Let's say since your last declaration, since your June 1st declaration.
A: I believe I saw Frank Stevenson's declaration we discussed earlier.
Q: Okay. Let me ask you, have you — you've downloaded and tried DeCSS, correct?
A: Yes, that's correct.
Q: Okay. Have you downloaded and tried CSS-auth?
A: I have downloaded the source for CSS-auth. I don't believe I tried it.
Q: Have you seen that in executable?
A: I believe I have an executable form of it. And I've seen the source code for it.
Q: Okay. But the executable, is that a Windows executable or is that some other program?
A: CSS-auth?

Q: Yeah.
A: As I understand it, it's a Linux program.
Q: Okay. CSS-cat?
A: It's also a Linux program.
Q: And have you seen the executable of that?
A: It's the same as CSS-auth.
Q: Oh, it's a unified program?
A: I'm sorry. It's the same answer: That I have seen — I may have the executable, but I reviewed the source.
Q: Okay. And have you tried either of them?
You said you didn't try CSS-auth. Have you tried CSS-cat?
A: I don't believe I did.
Q: Have you ever seen Power Ripper?
A: I have seen references and descriptions of Power Ripper.
Q: Have you ever downloaded it?
A: I don't believe I've downloaded it.
Q: Okay. Have you ever tried it?
A: I don't recall trying it.

Q: Okay. Just in case someone else downloaded it and you tried it.
A: Yeah.
Q: How about DVD Ripper, a program called DVD Ripper, have you heard of that?
A: No. I know I've never downloaded, nor tried.
Q: Speed Ripper?
A: Yes, I have.
Q: Have you tried it?
A: Yes, I have.
Q: Okay. What does that do?
A: The Speed Ripper that I downloaded was a DOS program.
Q: Okay.
A: That — if memory serves me correctly — that would take a file from a — from a DVD disk, decrypt it and store it on a hard drive.
Q: Okay. And how did it decrypt it?
A: To my understanding — I have never seen the source — to my understanding it uses, it understands at least part of the CSS algorithm.

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Q: And do you know when Speed Ripper was first created?
A: Speed Ripper first appeared in the logs, which is my only knowledge of time frames, was first referenced, I believe, in the early or mid-August, maybe late August time frame.
Q: Okay. But that doesn't tell you anything about when it was created, right?
A: I have no personal knowledge of when it was created.
Q: Okay. Do you have any idea when CSS was first cracked?
A: I have no — outside of what I understand from the development logs, I have no detailed knowledge of when it was first cracked.
Q: Okay. And the earliest claimed crack is early — the beginning of 1999 in the logs?
A: In the logs, yes.
Q: Okay. But it could have been cracked in '96 or '97?
A: It's certainly possible, yes.
Q: Have you ever heard of DVD Soft?
A: DVD Soft?
Q: Uh-huh. A DVD player called DVD Soft?

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A: I don't recall that exact name, but there's a variety of DVD players.
Q: Okay. Of all the utilities that I've just read off, except for CSS-auth, which I understand is just directed towards the authentication as opposed to the decryption part of CSS —
A: Yes.
Q: — do each of those programs result in a decrypted digital file?
To the extent that you know, and if you don't know for one program, just tell us.
MR. MERVIS: It might be helpful if you'd —
A: Could we enumerate those?
Q: Okay. The standing question is: Does this program, does the utility result in a decrypted digital file of a movie, of a DVD movie: DeCSS?
A: Yes.
Q: CSS-cat?
A: Yes.
Q: Power Ripper?
A: Yes.

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Q: DVD Ripper?
A: Don't — don't know.
Q: DODS — a DOD Ripper or DODS Ripper?
A: DOD Speed Ripper?
Q: There are two, I believe. DOD came up with a ripper and then Speed Ripper.
A: Never been entirely clear to me, to be honest with you.
Q: Okay.
A: I am only familiar with and was only able to find Speed Ripper variations.
Q: Okay. So Speed Ripper.
A: Yes.
Q: Okay. Are you aware of any programs that permit the capture of the decrypted digital signal while it is — after CSS has decrypted it and while it's being in the process of being played on a PC computer?
A: Yes, at least one of that list is — works that way.
Q: Okay. Which one?
A: Power Ripper.
Q: Okay. Are you aware of any capture card being used for that same — to do that same

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thing?
A: I have no knowledge or never seen a description, although it's certainly possible.
Q: Okay. And if someone wrote a program to do that would they end up with a digital file of the movie, a decrypted digital file of the movie?
MR. MERVIS: I'm sorry.
Object to the form.
You can answer.
A: They would end up — they would end up with the digital file. But again, these are not — these programs do not create the equivalent files, including the previous ones.
Q: "Equivalent files," what do you mean?
A: In other words, the output from those previous programs is not the same digital file that — to your question: They create digital files, but that doesn't mean it's the same result. Only that the result is in a digital form.
Q: Okay. What's the difference?
A: There are significant differences, depending on the technology.

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Q: For example?
A: For example, if you did it with a capture card you would get the result of a — you would, A, get a particular playback stream that a user saw.
Q: Uh-huh.
A: So a particular play-through sequence. You would have that turn to analog and back to digital. So it would have generational loss from those conversions and then it would also — I'm sorry.
Q: What do you mean by "generational loss"?
A: "Generational," there's a term in the video field of a generation: Every time you take a piece of content and you play it through a system you have what's called a generational loss, as it goes to what's called a new generation.
So this term came from videotape where every copy of a videotape from a previous videotape results in a loss. The picture becomes a little bit worse, depending upon the quality of your equipment.

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And so each generation of tape, kind of down the tree, if you will, becomes worse. And so the same term can be used in these areas.
Q: Okay. If you capture the stream before it's converted to analog, though, would you experience that generational loss?
A: In a digital — in a — if you were doing a straight digital copy, no.
Power Ripper, again, is an example where you would not have the generational loss of the decompression, analog, the analog back to digital recompress losses, which can be very significant.
But you would — Power Ripper can only capture, again, a particular playback.
Q: And that just means with a particular language you don't have — you lose some of the functionality?
A: You lose a lot of the functionality of a DVD.
Q: Okay. What do you lose?
A: You lose all of the menuing, all of the interactivity capabilities, you'd lose all of the ancillary languages. You'd have whatever

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they happened to play back on that particular stream.
Q: Now, I'm going to ask you more questions about this later, but you know what Divx is right?
A: DivX or Divx?
Q: DivX.
A: DivX. The —
Q: DivX, the new one. The capital one.
A: I'm sorry, I'm a little touchy.
MR. HERNSTADT: Then I shouldn't say: No, not the failed Circuit City — not that fabulous, but misunderstood product that was offered by Circuit City, but this one.
A: Divx. I just want to make sure we're clear about what we're talking about.
Div with a capital X was what we used in the previous record to clearly state —
Q: Right. Capital D, capital X, small I, small V.
MR. MERVIS: From here on in let's — unless —
MR. HERNSTADT: That is all we're going to be talking about. We're not going

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to talk about Circuit City.
No offense.
THE WITNESS: No offense taken.
MR. MERVIS: We'll see how it goes. I'm sure the record will be clean.
MR. HERNSTADT: Yeah.
THE WITNESS: Yeah. It worked out fine last time, so...
I'm sorry, can we repeat the question?
Q: You're familiar with Divx, right?
A: Divx, yes.
Q: DivX.
A: Yes, correct.
Q: Okay. The movies that are compressed in Divx don't have any of the functionality of a DVD; is that correct?
A: To my knowledge they do not, that's correct.
Q: You stated that the only function of DeCSS is to decrypt and copy; is that correct?
A: The only —
Q: Function of DeCSS.
A: Is to decrypt and copy?
Q: Decrypt and copy.

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A: Yes, that's correct.
Q: Okay. Is that an end in itself?
MR. MERVIS: Objection to the form.
A: End in what sense, I guess?
Q: Well, in the sense that: Is that a function that anybody would want to acquire DeCSS to achieve?
MR. MERVIS: Object to the form of the question.
Q: In your opinion.
MR. MERVIS: I still object to the form.
That's all right, he can answer.
A: I certainly can't speculate about what reasons people might have. I mean, I guess in general any action anybody takes has some other reason for doing it, largely.
Q: Okay. Let me ask you: Is there any, any usefulness to a decrypted DVD file sitting on a hard drive?
A: There are certain —
MR. MERVIS: I object to the form.
You can answer.
THE WITNESS: Okay.

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A: There are clearly the ones —
Q: Be careful to answer the question I'm asking: If it's sitting on a hard drive.
A: I understand. Sitting on a hard drive...
It is possible to use the file sitting on a hard drive for things.
Q: So you have to do something with the file, is what you're saying?
A: You can do something with the file.
Q: Okay. Is there any use to the file just sitting, taking up space on your hard drive?
A: Again, I can only talk about myself and —
Q: You're a computer programmer, right, you've been doing that for years?
A: Right.
Q: Fifteen years?
You have five, four or five years experience with a DVD format. You were a project —
A: Yes.
Q: — was it the project manager or the format manager at the Circuit City Divx?

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A: Yeah, I was one of the architects of the system.
Q: Yeah. You have a lot of experience with this.
A: Yes.
Q: Have you ever heard of a program that enables you to store 5 gigabytes of information on a hard drive and that's all.
A: That's all —
Q: That's all it does.
A: — all the program does?
Q: Yeah.
A: Certainly there are programs that do very specific things, yes.
Q: Okay. And can you think of anyone that would use DeCSS only to decrypt and store?
MR. MERVIS: Object to the form of the question.
You can answer.
A: Again, I can't speculate about what other people might or might not do.
Q: Actually, as a person with a great deal of experience with DVDs and computer programs, what's your professional opinion?

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What is your expert opinion on a computer program that does one thing: It decrypts and stores? And whether anyone would use that program if that's all that it did and all you could do with it.
MR. MERVIS: I object to the form.
You can answer.
A: I think we need to be very — I would want to discuss this, in the sense that clearly computer programs can do very specific things. And, in fact, many of them are built that way. And they can certainly be used in that way.
They are often then used as part of a larger system or are used as part of a process of other things.
Q: Okay. So you're saying that all that DeCSS does is decrypt and store.
Does it present any danger then?
MR. MERVIS: I object to the form of the question.
You may answer.
Q: Do you understand what I mean by "danger"?
A: I don't — I don't think I'm qualified

to answer. I...
Q: Well, let me ask you this: If all it does is decrypt and store, is there any danger that someone will get a copy of the movie?
A: The storage of the unencrypted system, that type of program would certainly be very helpful for someone who wanted to further distribute such content, and in that sense there is danger, yes.
Q: Okay. Well, you have to use some other program to do that, right?
A: Or additional procedures or — I assume you would have to use another program.
Q: Something other than DeCSS, if you want to copy the stored decrypted file, you have to use something other than DeCSS, correct?
MR. MERVIS: Wait. I'm sorry. Can you read back that question?
(Record read.)
MR. MERVIS: Okay. You can answer that question.
A: Effectively, yes.
Q: And if you want to put it on the Internet you have to use something other than

DeCSS?
A: Yes.
Q: And if you want to play it back you've got to use something other than DeCSS?
A: That's correct.
Q: Okay. If you want to, let's say, take a 30-second clip from the stored file you have to use something other than DeCSS; is that correct?
A: From the stored file?
Q: Yeah.
A: Yes.
Q: And that file, essentially, has absolutely no value to anyone, unless you're going to do something with it, wouldn't you say?
MR. MERVIS: Well, I object to the form of the question.
MR. HERNSTADT: You can answer.
MR. MERVIS: You can answer.
A: I guess it depends on how you define "value" or "do something with it."
Q: Use your own definitions in answering that question.
A: You could potentially sell that file and the hard drive or the tape, or whatever you

wrote it to, to someone for cash and never run a program yourself, theoretically.
Q: Okay. And would that have any value, unless you could do something with it?
A: I imagine to certain segments of society, yeah, it would have value.
Q: Really? Buying a hard drive or buying a DAT tape that — with something on it that you're never going to use would have value to somebody, with a movie on it that you're never going to use?
A: I don't believe I ever implied that the person buying the content was never going to use it.
Q: No, but that's what I said. It's got to be used for it to have value for the person purchasing it. In other words, that which gives it value is the fact that it can be used.
A: I will —
MR. MERVIS: Wait, wait. I'm sorry. I got all confused. Just read back the question, please. You guys are going too fast for me.

THE REPORTER: For me, too. I'll see if I got it.
(Record read.)
MR. HERNSTADT: Oh, you missed some words there.
MR. MERVIS: Good thing I asked, because I missed them, too.
Q: That which gives it value is the fact that it can be used.
MR. MERVIS: I object to the form of the question.
Q: Would you agree with that?
A: Not necessarily.
Q: Okay.
A: People buy stuff at auction all the time for enormous sums of money, for no obvious value to me, but it clearly has value to them.
Q: All right. Have you ever looked at the complaint in this case?
A: The complaint of the case?
Q: The complaint in this case.
A: I imagine I looked at it at some point.
Q: And are you aware that the plaintiffs

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have stated that the injury they will suffer is, essentially, the fact that movies can be distributed on the Internet?
MR. MERVIS: Well, I object to the form of the question, to the extent that you're referring to a document you haven't shown him.
But, you know, with that objection, you can answer.
Q: That that's one of the —
A: I mean, I clearly understand that that's the concern of the plaintiffs in this case.
Q: And that's something that you've testified to in your declarations, right?
A: Yes, absolutely. That the potential exists to use this program as part of...
Q: Okay. Have you ever seen a movie played — a DVD movie played from a DAT tape?
A: No, I have not.
Q: Okay. It's true, isn't it, that playing a movie from a DAT tape loses much of the functionality of a DVD movie?
A: If you could make the menus work, they

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would probably be pretty slow.
It's theoretically possible, but I agree.
Q: Okay. You've never seen what a DVD movie that has been decrypted with DeCSS, compressed with Divx, what that movie looks like; is that correct?
I think you've said that, but —
A: Right. I have no personal knowledge, correct.
Q: Okay. I'm going to probably ask you this in two different ways, but let's do it the first time here.
You stated in your deposition that bandwidth backbone capable of delivering a T3 line to the ordinary consumer already exists in many locations and on probably every university campus in the U.S. and foreign countries, and that there are a few private consumers who have it.
MR. MERVIS: There are a few, or few?
MR. HERNSTADT: A few.
MR. MERVIS: Okay. And you're saying that's in his deposition?

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MR. HERNSTADT: Yeah, that's more or less what you said in your deposition.
Q: Now, let me ask you: Is that still your understanding?
MR. MERVIS: Well, assuming you said it, but it sounds like —
A: I think it sounds essentially accurate and I would continue to believe that that's effectively accurate.
Q: Okay. What's the basis of your belief?
A: The basis of my belief is my knowledge of — my knowledge of networking technologies. I guess the history or the state of networking today, the environments that exist, at least in the limited college environments I have seen or had access to, or have knowledge of, I guess.
Q: What's the basis of that knowledge, these are articles that you've read?
A: These are articles I've read, these are discussions with people I know who have or are going to college, and the environments in the dorms in which they reside.
Q: Is this mostly anecdotal?

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MR. MERVIS: "This" being —
Q: Is your understanding of — that a T3 backbone is available to consumers on probably every university campus in the U.S., is that based on anecdotal testimony or statements given to you by friends in college, or is that based on something more than that?
MR. MERVIS: I have to object. I mean, there was —
MR. HERNSTADT: You've objected. I understand.
MR. MERVIS: Yeah, all right.
MR. HERNSTADT: You can answer it.
MR. MERVIS: You can answer.
I mean, it disregards prior testimony.
MR. HERNSTADT: I'm not trying to lead Mr. Schumann —
MR. MERVIS: I know he —
MR. HERNSTADT: Yeah. I'm not trying to mess up — mess with your testimony. I'm just trying to understand it.
THE WITNESS: Right.
A: I mean, that is — I guess in your — in the definition of anecdotal, that is

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effectively anecdotal evidence.
I have no personal knowledge.
Q: Okay. You live in Washington, right, or in the Washington area?
A: Yes, I do.
Q: Okay. Do you know what the LAN connection speed at Georgetown University is?
A: I do not.
Q: Do they have an ethernet?
A: I'm sure they have ethernets in their campus.
Q: Okay. I'm assuming they have a LAN, do you know if they do or not?
A: I'm sure they have a LAN.
Q: Okay. How about Johns Hopkins?
MR. MERVIS: Well, now you're getting outside of Washington.
Go ahead.
A: I'm sure — I mean, I'm — again, I'm comfortable estimating that Johns Hopkins has a LAN.
Q: Okay. But you have no idea what the speed is, the connection speed is?
A: Right. I mean, I can make educated —

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again, I can make educated guesses, as I did in my affidavit, based on my understanding of networking and the state of the art of technology.
Q: Okay. Do you know the connection speeds or any of the universities in the Washington area?
A: Firsthand knowledge?
Q: And by that I mean what their LAN connection speed is.
A: Firsthand knowledge, no.
Q: Okay. Do you know what the Internet connection out of the LAN —
(Telephone interruption.)
THE WITNESS: Sorry.
Q: Do you know what the Internet connection speed from the LAN to the Internet is at any of the universities in the Washington area?
A: Not offhand, no.
Q: Do you know it at any university in the country or college, or university in the country?
A: I know that there exists universities

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that have very high rates of bandwidth to the Internet.
Q: Do you know that from personal knowledge or because you've read it, or how do you know that?
A: Yeah, I know that from reading it in articles and —
Q: Okay. What have you read?
A: The — I guess I will say this is what I've read and what I know, I guess essentially primarily from reading: In universities were, in fact, the original Internet sites. The original — the Internet originated in a university network between university sites —
Q: What universities?
A: — in what was called the Arponet.
Q: Okay. What universities?
A: I don't know all of them, but they would have included prestigious universities, such as MIT, Stanford. I know that a lot of the big research universities were really the heart of that.
Q: How about Harvard?
A: I imagine Harvard may — they may or

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may not have been, I don't know.
Q: Do you know what the LAN access speed is at Harvard, what it's wired with, the LAN is wired at?
A: I guess I can't — I don't think that's a question that's answerable in its current form.
Q: Why?
A: Because every, every LAN port in the university may be running at different — in other words, it's only relevant to a particular place in a university.
Q: But typically the university is wired at a general speed and then certain departments, like computer science would be faster, or maybe if they're upgrading a certain portion of the campus, that might be faster. But generally speaking, don't they wire universities and colleges at 10 megabits or 50 megabits, or whatever, some particular speed?
MR. MERVIS: Wait.
I object to the question.
You can answer.
A: Again, I can't speak for college

practice versus standard industry practice. But I know that standard industry practice is, I guess, similar to what you've described, where you build sort of a backbone between departments or floors, or in a commercial environment.

Q: Have you done that?

A: Yes, I've designed and built those types of systems.

Q: Okay. And what's the speed that you used on those systems?

A: When I did this four and five plus years ago we used primarily a 10 megabit switch — 10 megabit, although there was some 100 megabit per second available even then.

Q: Okay. And what was his Internet access?

A: At the time of the facility, we didn't have Internet access at that time.

Q: Okay. And how many — how many portals were there, or what would you call it?

A: How many ports were there in that network?

Q: Yeah. How many machines are you linking there?

A: Those network designs were for essentially thousands of machines.

Q: Okay.

A: But that doesn't mean they shared that one link.

Q: They don't share the 10 megabit?

A: Not — the part of creating an effective network is ensuring that you can support the bandwidth requirements of that network, and so you architect the machines to be able to connect to each other at the speeds they need to.

Q: Okay. And that's because if you've got a lot of machines on the same pipe it will slow down the traffic; is that correct?

A: For what's called — for what's called, I guess, conventional ethernet or the — the word — is it the original, if you will, ethernet was a shared pipe. Modern networks are typically built now with what's called switched ethernet, which doesn't have the same issues as the shared. The original shared ethernet did, in that sense.

Q: Okay. But it does have issues in

terms of how many — how much traffic can be on the ethernet at any one time, doesn't it?

A: It — the correctly used, the switched ethernet hubs, as they're called, and building a network with those can allow you to maximize the data going through each connection so that you can get much closer to the theoretical maximum of the pipe.

Q: Okay. But the amount of traffic on the pipe still affects the speed of the traffic; isn't that correct?

A: Each pipe has — each connection has a finite bandwidth, absolutely.

Q: Do you know if universities and colleges have limits on how fast the information can be uploaded onto an ethernet connection?

A: I have read that universities — that some universities limit, and it's technologically possible to put, I guess, flow — the equivalent of flow restrictors in, if you will.

Q: Like a governor on our —

A: A governor.

Q: — on our minibikes when we were a kid.

A: It's technologically possible.

Q: Okay. So say you might have a 100 megabit per second ethernet, but there could be 128 kilobit per second limit on the speed at which information could be uploaded onto that ethernet?

A: It is theoretically possible. I have no knowledge of how or where those are used.

Q: Okay. But you've read that that kind of limitation is in use, right?

A: I have read that some universities are doing that or thinking of doing that.

Q: And to your knowledge, do colleges and universities have a policy that all students must sign onto, with respect to the use of the ethernet and the Internet connection from the Internet?

A: I can't speak for all universities. I am aware that some universities have such policies.

Q: And does — would those policies — do those policies concern the kind of bandwidth use that each student is permitted to make?

A: I have no — no knowledge.

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Q: Have you ever seen one of these policies?
A: I'm sure I saw one when I was in college, but it was —
Q: Okay.
A: — a long time ago, and didn't talk about the Internet.
Q: Okay. Now, have you ever used Divx?
A: Divx?
Q: Divx.
A: I have not used Divx, no.
Q: Okay. What's your knowledge about Divx? DivX.
MR. HERNSTADT: Can we take two minutes?
MR. MERVIS: Sure.
MR. HERNSTADT: I have to call your colleague, Scott Cooper, about tomorrow's deposition.
MR. MERVIS: You've got it.
THE VIDEOGRAPHER: It's 4:49 p.m. We're going off the record.
(Recess taken.)
THE VIDEOGRAPHER: The time is

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4:56 p.m. and we're back on the record.
(Record read.)
THE WITNESS: There's no answer? Ah, okay.
A: My knowledge of Divx is based on essentially reviewing discussions and descriptions of it in articles and on the Internet.
Q: Do you know what the steps involved in taking a DVD and turning it into a DivX'd movie that can be posted on the Internet or made available via the Internet?
A: Again, it's based on my understandings from reading — and as well as obviously using my knowledge of how these things work to look at those and understand whether they make sense, and that — but the steps are essentially to create a — get a digital DVD stream, the output of DeCSS —
Q: Or...
MR. MERVIS: Or nothing. Let him finish his answer.
A: Yeah, the output of DeCSS or I imagine you could take the output of Power DVD. And

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again, you would lose some of the process. Then pass that output through the Divx compression engine, resulting in an output file that you can then play with, I believe it's the Divx playback engine. And, of course, the Windows media server, playback environment.
Q: What is Divx?
A: As I understand it, Divx is a suite of software or a set of software that consists of, I guess, a custom shell or a custom-user interface wrapped around the Windows MPEG 4 coder/decoder, what's commonly called a Codec, which I believe is distributed legally. I have no knowledge. I suspect it may not be legally distributed.
Q: Is it sort of a pirate program?
A: That's essentially my — I think they may have created some of it themselves, but they clearly pirated pieces of it from Microsoft or used Microsoft technology within it, likely illegally.
Q: Okay. How long is that process that you described of using DivX, how long would that take?
MR. MERVIS: Wait. I'm sorry. From

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the beginning to the end or just the compression part?
Q: To decrypted some — getting a decrypted — decrypting a — Taking a DVD and ending up with a Divx movie.
A: Certain parts I know very well are the parts I can only hazard, essentially, informed guesses at.
Q: Uh-huh.
A: The hack — the DeSS (sic) decryption portion of it is pretty fast. I mean, on a 4 or 500 megahertz PC, it's probably 10, 15 minutes, something on that norm. And it's quite fast.
Q: For, say, like a 6 gigabyte movie?
A: For like a 4 gigabyte movie, where maybe a 6 gigabyte is 20 minutes. But it's quite fast. The actual running of the Divx program is probably pretty slow because MPEG 4, like MPEG 2, shares the characteristics that the compression step is significantly more resource intensive and compute intensive than the decompression process. Typically — at least in

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MPEG it's, I think it's on the order of 10 to 1 or something like that, in terms of resource requirements on horse power. So my guess is it's a very lengthy process with Divx, on the order of many hours.

Q: Okay. And what is the compression ratio that you get when you apply Divx to an MPEG 2 file: How much can you shrink it down, what percentage?

A: My understanding — again, I haven't seen Divx and what it allows you to do. But I know that the technologies underneath it, in terms of MPEG, both MPEG 2 and MPEG 4 essentially allow the creator of the compressed contact to control the amount of compression that is applied to the content. So there may be no theoretical limit to how small you could make it. Of course, you would lose quality to some degree as you go down the curve.

Q: Is MPEG 2 a lossy compression technology?

A: Yes, it is.

Q: How about MPEG 4?

A: MPEG 4 is also a lossy compression

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program.

Q: Okay. So you're saying you could essentially compress it as much as you to want to using DivX compress — strike that.

You're saying you could compress the DVD files as much as you want to using Divx?

A: I'm sure there are effective limits. But essentially, yeah, you can kind of dial — if you want, dial in what kind of bit rate you want to have.

Q: Okay. At that point are you talking about compressing or are you talking about stripping out information in order to make the files smaller, or a combination of the two?

A: Compressing is essentially — lossy compression like MPEG is, in fact — maybe stripping isn't the right word.

But you essentially lose detail in order to compress them.

Q: Okay. Am I wrong in also thinking that it's a way of — it's a mathematical — strike that.

It's a program that enables you to write — describe the information in a

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mathematically more efficient way?

A: Yeah. One of the advantages of MPEG 4 — in fact, one of the design, the original design purposes of MPEG 4 was to allow high quality video to be created at much lower bit rates than the original MPEG 2 and MPEG 1 proposals.

Q: Now, is it true that the mathematics behind MPEG 2 and now MPEG 4 are sort of reaching a point of no return, in terms of how much more they can compress? And that in order to get more efficient compression technologies, there's going to have to be some kind of mathematical breakthrough?

A: There certainly doesn't need to be a mathematical breakthrough. I mean, there are other compression technologies that are arguably better than MPEG, such as Wavelets and Fractals, that are reasonably fundamentally different and can result in considerably higher compression ratios.

In fact, MPEG 4 is a combination of the MPEG compression — the traditional MPEG 2 which is a discrete cosigned transform

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compression technology and the Wavelet technology. MPEG 4 is actually — can, again depending on the functions of the compression engine and what it chooses to do, can be a fairly complex description of the video, but that can result in far higher compression algorithms with less loss of data than one would get from the straight MPEG 2 compression at the same size.

Q: Well, how about compared to MPEG 4 or Divx?

A: That's what I'm on, MPEG 4.

Q: Okay. You were saying MPEG 4 —

A: — was designed specifically to give you good or far better video quality at low, low bit rates or low bit rate equates to small file sizes.

Q: Okay. And when do you expect the next compression technology to be rolled out?

MR. MERVIS: Object to the form of the question.

You can answer.

A: There are, I'm sure, many people working in labs and universities all over now, on that. I think MPEG 4 is just now starting to

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really rollout in any significant degree.
Q: In fact, Divx just sort of came out almost before MPEG 4?
A: Yeah. They're very — they were a very early user of the technology, yes.
MR. MERVIS: Wait, that was your Divx?
THE WITNESS: No, DivX, not my Divx.
MR. MERVIS: Oh, DivX was an early user of M —
Okay. I'm sorry.
Q: Okay. I'm going to work back to some of those, some of the Divx factors.
Take a look at your Second Supplemental Declaration, which is Exhibit 5.
(Schumann Exhibit 5, copy of multipage document, the first page is entitled Second Supplemental Declaration of Robert W., marked for identification, as of this date.)
A: Okay.
Q: If you would. In paragraph — take a look at that. Let's sort of walk our way through this.
In paragraph 1(a) you say that you're going to address "Defendants' claim that DeCSS

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has no use in connection with the copying or 'piracy' of DVD movies."
First of all, where do you — where did you get this claim, that defendants' claim is that DeCSS has no use in connection with copying or piracy?
A: I would — I mean, to give you specific references I would have to look at all — there were a large number of affidavits from the defense.
Q: Okay.
A: But there were — I know there were discussions that are partly addressed by this around that: Well, you don't need DeCSS to make what are called pirated copies or bit-for-bit copies of DVDs. And there were examples presented of other types of piracy.
But to my reading, they described that as implying that those types of piracy made it unnecessary to have DeCSS. And I don't agree with that particular, I guess conclusion of those affidavits.
Q: Is this your own statement or did a Proskauer lawyer write this for you, that

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"Defendants' claim that DeCSS has no use in connection with copying or 'piracy'"?
A: A Proskauer lawyer is the one who edited this — or edited, I shouldn't say — who did the actual typing of the text. I helped create the essence of the text and clearly agreed with and edited, extensively edited all of this text and helped create certain — I wrote certain sections, not myself, but did the first drafts, I guess, directly myself for certain sections.
Q: And in your — throughout this declaration you've used the word "copying" or "piracy," those two words a number of times.
What do you mean by "copying"?
A: Copying is the making — and I guess, if you want to, to give me specific examples in here — I don't want to say this drives to every possible example, because I would want to look at specific examples.
But copying in general, in the context of what's being discussed here, would imply the copying of content onto other places and people and distribution, and that type of stuff.
Q: Okay.

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A: Further copying.
Q: "Copying" includes within its meaning the concept of distribution.
Is it copying and distribution or is it just copying?
MR. MERVIS: You're asking him for his — what he meant?
MR. HERNSTADT: Yeah. I want his definition as he uses the word "copying" in this declaration.
MR. MERVIS: Okay. I understand.
And you're asking whether distribution is part of that definition of copying in his declaration.
MR. HERNSTADT: Right. And he said that's copying from one place to another place and then expanded on that.
MR. MERVIS: I understand.
A: And the — I guess the essence of that in — again, I'll need to look at exact instances of the word "copy," okay, but the essence here is in the sense that piracy is more than the commercial — the sale for profit of a piece of content, which is what, in my, I guess core read

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of the claims from the defendants' affidavits, was that piracy —
(Telephone interruption.)
THE WITNESS: Stop this thing.
A: — was the claims from the affidavits that piracy was really only for-profit sale of content. Okay?
And what I was getting at here is very much that piracy is much more than that. Any illegal use of the content — if I take a piece of content, okay, and I make a copy of that tape. If I go to Blockbuster and rent a tape and I make a copy of that tape and I give that tape to my neighbor, okay, that is piracy of the content. It's theft of copyrighted materials.
Q: Okay. Let me ask you this: If you buy a videotape and make a copy of that videotape and give it to your neighbor, is that piracy?
A: If I give it to my neighbor to watch?
Q: No, give it to him.
A: If I give it to him?
Q: Uh-huh.
A: To my personal understanding of what's allowed and not allowed, yeah, that's piracy.

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Q: Okay. And if you buy a CD and you make a tape of it to play in your car and leave it in your car, is that piracy?
A: In the case of a CD, it is my personal understanding that that may be legal. And it's certainly widespread.
Q: Okay. And if you buy a videocassette and you take it home and watch it and then trade it with your neighbor for a videocassette that your neighbor's purchased, is that piracy?
A: If I give him the original videocassette I had?
Q: Uh-huh.
A: No, that's not piracy.
Q: Okay.
A: To my personal understanding. Again, I am not one to make legal opinions.
MR. MERVIS: And I didn't object, because I felt that was fairly self-evident, but whatever.
MR. HERNSTADT: Yeah, I think it is.
Q: So let — I just want to get back to your — to the definitions that you use in your

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declaration of "copying," and then the definition that you use of "piracy." Because we were talking about copying and you got into piracy.
And rather than to tell me this as what it is not — that it's somehow different than what the defendants used the word "piracy" as, I'd like you to tell me: What is your definition of the word "copying"?
A: Copying is making additional copies of the content after — I mean, obviously DeCSS is making this copy. But "copying" here refers to making further copies of the DeCSS content.
Q: So it's decrypted content. You're talking about decrypted content or are you talking about any kind of copy?
Here you're talking about copying the decrypted files that result when DeCSS is applied to a DVD and making additional copies of that.
A: I would — again, I would have to read it through it. And I'll be happy to do that if you want me to.
Q: You did it before.
A: I think that may apply — Well, I wasn't reading it for a

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particular purpose.
Q: Okay. I'll tell what , that let's get a working —
A: I mean, if you have a particular —
Q: No, I don't. I really want to know what the terms that were — that you used in this declaration.
How about this, rather than belabor it too much: Let's get a working definition and you should feel free to amend it or clarify it as we go through your declaration.
A: Okay.
Q: Because I don't want you to be uncomfortable.
A: No.
Can we use the word for copying, "the making of additional or proliferation of additional copies of the content"?
Q: Okay. When you say "proliferation," does "copying" include within it some concept of distribution or is it just making copies?
MR. MERVIS: Well, I object to the form of the question in light of the witness's, I think, repeated statements that

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he would need to make reference to those terms in various places in the declaration.
But if he can answer, he can answer.
I mean, I —
MR. HERNSTADT: I mean, let's be clear: Mr. Schumann read through this about two hours ago —
MR. MERVIS: Yes, he did.
MR. HERNSTADT: — the whole thing.
He adopted it.
MR. MERVIS: Yes, he did.
MR. HERNSTADT: The whole thing. He adopted it.
MR. MERVIS: Yes, he did.
MR. HERNSTADT: Which is — fair enough. And he wrote it. And he wrote it a month ago.
MR. MERVIS: Right.
MR. HERNSTADT: And this is not a difficult term. This is a term that's very basic to this case. This is the term "copying." And then I'm asking him about the term "piracy."
I understand your hesitance to block

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yourself in, and I respect that. Which is why I —
MR. MERVIS: We'll I'm not sure that's a truer characterization.
MR. HERNSTADT: Well, no. I don't mean that in a negative way. If you're using a term where you want to make sure that the term applies as you've used it, and I understand that, which is why I say you should feel free to amend it as we go through.
Q: I just want to get a sense of what it is: So is it copying and distribution, is it making numerous copies of the content of the decrypted DVD?
MR. MERVIS: Well, I have the same objection.
Again, I mean, if you can answer it, you're free to answer it.
A: Yeah, I — I mean, I guess I would essentially say it's the making of any copies after the — either before or after DeCSS has occurred.
Q: Okay. And how about piracy?

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MR. MERVIS: I have the same objection.
But, again, the same instruction: You can answer it, certainly.
A: Again, there's an issue of — definition of, I guess, the legal questions here. Or what's, quote, legal versus —
Again, I don't —
Q: I'm asking you.
A: But in this particular concept I want to — part of what I was trying to convey here is that the copying of content, even with your friends in the video case we exampled, is, it's certainly in my mind the equivalent of piracy or is piracy. It's part of piracy.
Q: Okay. Does piracy, as you use in this declaration include within it the concept that money is being paid for a copy?
A: It does not.
MR. MERVIS: I object to the form. But you've answered, so...
Q: That's fine.
And how about copying?
MR. MERVIS: How about what?

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Q: Copying. The same question with respect to the word copying.
MR. MERVIS: Whether money is involved?
MR. HERNSTADT: Uh-huh.
MR. MERVIS: Okay. I object to the form.
You can answer.
A: The same as piracy, neither one way nor another. I don't believe they're necessarily related, either one of them, to the exchange of money.
Q: Okay. Are there any noninfringing using for DeCSS?
MR. MERVIS: I object to the — I'm sorry. I object to the form of the question. It does unquestionably call for a legal conclusion, and also one that I'm not even sure is relevant to the case.
With that objection, you can answer if you understand.
A: I don't think I'm qualified to answer that question.
Q: Okay. Is there a use for DeCSS that

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does not involve copying?
A: Is there a use for —
Q: Uh-huh.
A: — for DeCSS that does not involve copying?
For use for whom?
Q: For the person who's using the DeCSS.
In other words, we had a discussion before about DeCSS's function being to decrypt and to copy onto the hard drive.
A: Yes.
Q: Okay. And what I'm saying is that — when I say "a use for DeCSS" I mean with use of the copy made by DeCSS.
A: Right. Is there —
My question is: Are you asking a legal question?
Is there a legal use for DeCSS?
Q: No, is there an actual use.
Okay. I'll ask it a different way:
Can you use DeCSS to decrypt a file so that you can view a DVD movie that you purchased on a Linux machine?
MR. MERVIS: Okay. I understand.

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You're asking whether that's physically possible?
MR. HERNSTADT: Yeah.
A: Yes.
MR. MERVIS: Okay.
Q: Can you use a file, the movie file that's been decrypted by DeCSS, to take some clip from that file to use in, let's say, a high school term paper?
MR. MERVIS: And again, with the same qualification — you're not asking for a legal question. You're saying, can you — can it physically be done.
MR. HERNSTADT: Yeah. Can you do it?
A: Is it technically possible?
Q: Yes.
A: Yes.
Q: Okay. Is that a use that can be made of the DeCSS file?
A: It is.
Now, if you made a copy for the term paper you would be, I would presume, be making a copy of at least portions of the file, because you would store them in the resultant uplift

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file.
Q: Sure. Let's say, yeah, you want to do a digital presentation: Plug your computer into a projector and, you know, with a combination of text and images, and you pull pieces of images from different movies that you've used DeCSS to decrypt: Could you do that?
A: It is technically possible.
Q: Okay. Can you use — well, I won't ask you about region coding, because we've already gone through that.
Let's see.
Okay. In paragraph 3, you say that, you note that copying — and this is the copying of DeCSS after it decrypts — "is not an essential step to decryption or viewing of CSS-protected DVD content."
Is that statement limited to the viewing of CSS-protected DVD content on CSS-equipped DVD players?
A: No, it is not.
Oh, ah, wait.
Can you re-ask that question?
MR. HERNSTADT: Go ahead.

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Sorry.
A: On licensed?
Q: CSS-equipped. I'm not asking a legal question whether it's licensed or not.
THE WITNESS: Okay. Can we reread the question?
(Record read.)
MR. HERNSTADT: I think you got that wrong.
Or is that what I said?
MR. MERVIS: I think, if it is, it's hard to understand.
MR. HERNSTADT: No, I don't think that's what I said. Let me try again.
THE WITNESS: Not that I was understanding what you were saying.
MR. HERNSTADT: No. I think it was — the word DVD was in there somewhere, but I probably slurred on it and you missed it.
MR. MERVIS: Well, let's try it again.
Q: Let's try again: Is that — let's see — copying is not an essential step to decryption or viewing a CSS-protecting DVD content.

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I can't remember what I asked.
MR. HERNSTADT: Can you read that again?
(Record read.)
Q: Is that statement limited to the viewing of CSS-protected viewing consent on CSS-equipped DVD players?
MR. MERVIS: I'm sorry. Are we — Is that a question that you're now posing to the witness?
A: Have you decided what you want to — I'm sorry, I wasn't out.
Q: I think that's the question.
A: Okay. Can you —
Q: Is that statement, the statement —
MR. MERVIS: Let's start with the statement.
Q: Okay. The statement is "such copying is not an essential step to decryption or viewing of CSS-protected DVD content."
MR. MERVIS: Okay.
Q: And my question to you was: Is that statement limited to the viewing of CSS-protected DVD content on a CSS-equipped DVD player?

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A: That "viewing" in the middle threw me off.
Is that copying?
Q: Is that statement limited to the viewing of CSS-protected DVD content on a CSS-equipped DVD player?
A: Well...
MR. MERVIS: If you need it back, you can get it back from the reporter.
THE WITNESS: No, I think I know it.
MR. MERVIS: Oh, do you?
THE WITNESS: Did you have a comment?
MR. MERVIS: No, I don't have any comment. I think I understand.
THE WITNESS: That's kind of what I was trying.
A: That comment —
The short answer is, yes.
Q: Okay. And I assume that as soon as a Linux player is available, that that comment will also apply to a Linux player, a Linux DVD player, that that comment will apply to a Linux DVD player?
In other words, that copying is not an

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essential step to decryption of CSS-protected DVD content, that that — that you would agree it is not an essential step to the decryption of DVD content on a Linux DVD player.
MR. MERVIS: I object to the form of the question.
A: I agree. And I would like to make clear that I do not imply or say that the opposite or the inverse of your question is true.
Q: Which is what?
A: That if a DVD player does not have CSS, that DeCSS is necessary or desirable.
Q: Okay. If you have a DVD player that is not equipped with CSS, how do you watch a CSS-equipped movie without copying?
A: You add the CSS decryption to the player.
Q: Okay. How do you watch a CSS-equipped movie on a DVD player that does not have CSS?
I'm not asking what you can add to it. I'm asking, how do you watch it?
If that's what you got, how do you watch it?
MR. MERVIS: Well, wait a minute. I'm

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sorry. I thought it was, how could you watch it without making a copy.
MR. HERNSTADT: Yeah.
MR. MERVIS: Okay.
MR. HERNSTADT: All right. Let me rephrase it. Isn't —
A: Yes, it is.
Q: Okay.
A: In an absolute sense, you would need to decrypt the content prior to watching it with this theoretical playback system you have.
I believe my statement in my affidavit revolves around desirability of such and whether that is — it is not an absolute statement. It is a relative statement.
Q: Okay. We can disagree with that. I'll just read your full statement.
A: Okay.
Q: It says, "such copying is not an essential step to decryption or viewing of CSS-protected DVD content and would not be desirable from a functional standpoint."
MR. MERVIS: Wait.
A: That's correct.

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Q: Okay. Now, my question to you is, if you are one of the millions of people who use Linux and do not have a CSS equipped DVD —
A: Yes.
Q: DVD player for your Linux box.
A: That's correct.
Q: Okay. But you do have a DVD drive. Isn't copying an essential step of viewing a CSS-protected DVD?
A: No.
Q: How do you watch it otherwise?
A: You don't have a DVD player, either.
Q: I think you're splitting hairs there. Isn't it an essential — isn't it an essential step?
That is the question. Not the only step, but an essential step.
A: The removal of the CSS encryption is necessary.
My statement says that the copying is unnecessary.
Q: Okay. How do you remove —
A. Or unessential, I should say.
Q: Okay. How do you remove — in real

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life, how do you remove the CSS encryption without copying?
A: In the Linux environment?
Q: Uh-huh.
A: You take the code snippets that are now widely available and you add them to your open-source DVD or your open-source player, whatever that is. Okay?
It's the advantage of that environment, okay?
And now you have no need to copy. And, in fact, the playback environment is much, much improved because you don't have to wait for the copy to complete before you can watch the movie.
Q: Okay. I think we're both agreed on that. But I think we're also agreed there is no Linux DVD player at this point, right?
A: There —
Q: If you want, we can leave it open space here and you can go home and see if the Sigmund Designs and the InterVideo are vaporware or real.
A: No, mo.

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The Linux environment, as I believe I've described in one of these documents, has a limited function MPEG playback environment that existed in the — even, I believe the August time frame.
This environment was an open-source environment, to my knowledge, and thus is a fairly simple engineering exercise to take the CSS decryption function and include it in that playback environment, even though it would not be a fully-functional DVD player, but would allow you to, at some degree, watch the content, okay?
Again, without the need for an unnecessary and undesirable intermediate step of having to write the content to your hard drive.
Q: Okay. Has anyone done that that you know of, that fairly simple engineering exercise you just described?
A: Not to my knowledge, but I haven't looked.
Q: What specialized knowledge does that take?
A: Not a ton.
Q: Okay. If you don't have that

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specialized knowledge, do you have any choice but to use something like DeCSS to decrypt and copy a DVD movie before playing it back?
MR. MERVIS: Well, I object to the form of the question.
MR. HERNSTADT: You can answer that question.
MR. MERVIS: You can answer. You may —
Can we get it back?
MR. HERNSTADT: Do you need it?
MR. MERVIS: I'd like it, whether he needs it or not. I want to hear it.
(Record read.)
MR. MERVIS: Okay. I've stated my objection.
You can answer, if you're able to.
A: I...
Do you have any choice?
I imagine you'd have choices, yeah.
MR. HERNSTADT: Okay. Let's take one minute. He's got to change the tape.
MR. MERVIS: That's fine. Okay.
Can we take like five?

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MR. HERNSTADT: No.
MR. MERVIS: We'll take five anyway.
MR. HERNSTADT: Darn it. Okay.
THE VIDEOGRAPHER: The time is 5:30 p.m. This completes tape No. 2 of the videotape deposition of Robert Schumann.
(Recess taken.)
THE VIDEOGRAPHER: The time is 5:54 p.m. and this is tape No. 3 of the videotaped deposition of Mr. Robert Schumann.
(Record read.)
Q: What are your choices?
MR. MERVIS: How I did know you were going to ask that question?
MR. HERNSTADT: I gave Mr. Schumann an opportunity to think about it, too.
MR. MERVIS: He probably knew, too.
A: I mean, in any environment you — a user who doesn't have the technology to do what they want has choices to — to use technology.
But I — I mean, if you have a videotape and you don't have a videotape player, what are your choices?

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You can figure a way to build one for yourself, go buy one or you can play around and try to figure out how to make one. I mean, you have choices.
Q: Okay. What I'm talking about is a situation where you have a computer, where you have a DVD drive, and where you have a DVD that you've purchased and you plant to play. But your computer is a Linux player, so what you don't have is a CSS-equipped DVD player.
A: Okay. You don't have a CSS-equipped Linux player.
What are your choices?
Q: Yeah.
A: You could — Are we talking legal choices or illegal choices?
Q: I'm talking — I'm not asking —
A: Technological choices?
MR. MERVIS: Yeah, let's —
Q: Technological choices.
MR. HERNSTADT: The unspoken colloquy between Mr. Mervis and myself was to the effect that: We're not asking you about

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legal or illegal. We're asking you about technology.
A: So my technological choices could include things like: Steal a copy of Windows and steal a Windows player and play it that way.
Q: Okay. We've seen —
A: I'm not saying it's a legal choice. But it's clearly a technological choice.
Q: No, I understand what you're saying. You've said that you viewed the, I guess, You've Got Mail which you decrypted with DeCSS?
A: Uh-huh.
Q: Was — how did the quality of that compare to the DVD?
A: The quality of what I viewed?
Q: Yes.
A: In the case where I did it for, I guess the third affidavit I did, it was identical to the quality of the base TV.
Q: Okay. In paragraph 4 initially you use the word "piracy," again, in this first line of this, are you using it in the same way that you have described it before?

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A: Yes. In fact, I think this paragraph essentially tries to get to what I was saying before: That...
Q: "Piracy is the unauthorized copying and transmission buy and among a vast number of individual computers with users of copyrighted works utilizing compression technologies that enable a considerable amount of data to be copied, stored and transferred"?
MR. MERVIS: I'm sorry.
I object to the form of the question.
A: I'm sorry. Can you repeat that question?
(Record read.)
A: And I'm sorry, I'm missing where is the question.
Q: Is that piracy?
A: Oh, thank you. I was missing the question part of that.
Is that piracy?
Q: You said that —
A: Yes, in my — certainly in my personal understanding, absolutely that's piracy.
Q: Okay. And is that the definition of

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piracy that you were using in this declaration?
A: It is part of the definition of what I would define as piracy in this declaration.
Q: Okay. Now, do you understand that commercial piracy is something different than, let's say, home piracy?
MR. MERVIS: I object to the form. You can answer.
MR. HERNSTADT: You can answer.
A: If you're referring to my use of the word "commercial" in here, and particularly, I believe, in that paragraph, I would need to look through to make sure I'm consistent. But for the purposes of this paragraph I used that solely to distinguish piracy that is related to the earning of dollars versus piracy that's not related to money-based transactions, I guess.
Q: Okay. We talked — you mentioned earlier bit-by-bit copying. Now is that what a — I'm just going to sort of give a term to you here — a professional pirate would used to make a pirated DVD?
MR. MERVIS: I very much object to the form of the question.

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You can answer.
A: Are you talking exclusively or —
Q: No.
A: I mean, it's a tool that can be used.
Q: And is that a tool that can be used to make an exact copy of a DVD?
A: That's essentially what that tool would do.
Q: Okay. And are you aware that DVDs are sold in Taipei or Hong Kong on the streets for 3 4, $5?
A: I'm aware from, you know, general knowledge, not personal knowledge.
Q: Okay. And do you know if those are pirate — those are bit-by- bit copies?
A: I do not know the nature of all of those copies. I know they come in various forms.
Q: Okay. For an individual who has a CSS-equipped DVD player, is it more convenient for that person to take the amount of time to decrypt in Divx a DVD and engage in trading of DVD movies on-line or is it more convenient to purchase, let's say, a pirated DVD for 4 or $5?
MR. MERVIS: Well, I object to the

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form of the question.
MR. HERNSTADT: You can answer.
A: That depends entirely on the circumstances under which those things are available.
If I have to fly to Taipei to buy the $3 copy, it's much more convenient to get it through trading over the Internet, even that 56 kilobit per second modem speed.
Q: Okay. Turning back to Divx, DivX, paragraph 6 you talk about "high ratio compression technology such as Divx." I'd like you to take a look at Schumann — excuse me, the Stevenson declaration, which is Exhibit 6.
And if you would, let's read through it.
MR. MERVIS: Exhibit, is that —
A: Okay, yes. Okay. Where are we?
Q: Let's start with paragraph 3.
A: Yes.
Q: And I'd like you to look through paragraph 3 and tell me if there's anything in that paragraph that you disagree with.
(Witness looks at document.)

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A: I'm not sure I fully agree with all of this.
Q: Okay. What do you not agree with?
A: Should we do it sentence by sentence, perhaps?
Q: I would — just for speed sake, why don't you just pick out the sentences you disagree with and we'll assume that you agree with the rest?
A: Okay. The second — third sentence. "DivX is, however, far from the threat that plaintiffs and MPAA make it out to be."
Q: Okay.
A: I don't necessarily agree with that statement.
Q: Okay.
A: And the rest, to the — I essentially agree with.
Q: Okay. Now, let's turn to paragraph 4. And I'm going to ask you to look, just so you know, at paragraphs 4, 5, 6 and 7.
MR. MERVIS: I'm sorry, you want him to look at all of those now?
MR. HERNSTADT: Yeah, but let's do it

one paragraph at a time.
MR. MERVIS: Okay.
THE WITNESS: Okay.
(Witness looks at document.)
THE WITNESS: Okay. I've read 4. I'm sorry, your question?
Q: Is there any part of that paragraph with which you disagree?
A: I — the second paragraph, the results —
Q: Sentence?
A: Sentence. Excuse me, the second sentence relating to the video quality.
Q: Uh-huh.
A: As we discussed earlier, is entirely dependent — again, I can't speak from personal knowledge of Divx — but from knowledge of MPEG 4 and the mechanisms employed, it's completely dependent on the compression ratio, the quality of the compression engine. There are a variety of parameters that would impact the, quote, resulting quality.
Q: Okay. Well, let's look at paragraph 7 of your second declaration, the June 1st — the

third declaration, the June 1st declaration. The last — the last sentence.
A: Okay.
Q: You say, "That same" — you're referring to a — "5 gigabyte DVD image when compressed using a high compression Codec such as DivX will have a size of approximately 1.2 gigabytes allowing it to be transferred" — and then you talk about transfer speed. We'll come back to transfer speed.
A: Uh-huh.
Q: But let's use that — well, first of all, how do you get 5 from saying that — what's the basis for your saying that Divx reduces 5 gigabytes to 1.2?
A: This statement was based on, I believe, press reports or articles — which may or may not have been done as attachments, I would have to look — that discuss the process of doing that and taking it to that size.
Q: Okay. Now, if you if you plug in that 5 gigabyte to 1.2 gigabyte compression ratio and, let's say — and call that the file sizes that plaintiff suggests in paragraph 4 of the Schumann

affidavit, does that change your agreement or disagreement.
The Stevenson affidavit.
A: The Stevenson.
Q: Yeah. I'm sorry.
A: Again, without having seen actual examples, I couldn't describe to you the degree of the loss of data. Again, it's widely dependent on many factors I went into. But there will clearly be loss of quality, as we had discussed earlier.
Q: Okay. So you would agree that it's not a perfect copy?
A: Of the original DVD?
Q: Yeah.
A: I agree. It's what the first sentence says. I agree with the first sentence.
Q: Okay. And you agree that there's a loss of quality, but you're not — you don't know what level of loss —
A: It's very dependent.
Q: — would arise?
A: That's correct. And it would be dependent from one example use to another.

Q: Okay. Now will you take a look at paragraph 5 and tell me what, if anything —
MR. MERVIS: Oh, of his, of Schumann's affidavit?
MR. HERNSTADT: Yeah.
A: I'm sorry, can we complete this discussion of 4?
MR. HERNSTADT: No, paragraph 5 of Stevenson.
MR. MERVIS: Oh, I'm sorry. I'm getting very confused.
Q: Oh, is there more on 4?
A: Yeah. I'm not sure I agree with the — or that I'm not sure I agree with the implications of the fourth sentence and would want to clarify that. I'm sorry, the last sentence.
Q: The last sentence. "Such a copy, if made, is not a perfect digital master from which further copies could be made and distributed"?
A: That's correct. I agree that it is not a perfect digital master, in the sense the DVD is a perfect digital master. It is certainly a digital copy from which further digital copies

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could be made.
Q: Okay.
A: That are identical to that copy, so there's no generational loss from one Divx copy to the next.
Q: Right. Okay. If you took a VHS cassette and digitize it.
A: Yes.
Q: The resulting file would be a digital file?
A: Yes.
Q: And every copy made from that digital file would be of the same quality?
A: That's correct, in the same way this would be, yes.
Q: Got it.
Okay. Now, please take a look at paragraph 5 and tell me if there's anything in there that you disagree with. And that's paragraph 5 of the Stevenson declaration.
(Witness looks at document.)
A: Okay. I'm ready.
In the first sentence there — I think it's important to clarify: That the essence of

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what he is saying is true, in that the compression systems are algorithm-based, okay?
However, it's not clear that there is a theoretical perfect compression system, or maybe there is, okay? But the reality is: Each implementation of a compression mechanism — certainly in MPEG 2 and I have no reason to believe that's any different in MPEG 4 — the size of the file and quality of the result at a given bit rate is dependent on the quality of the algorithms used to create the compressed form of that file. Okay?
And so it's not quite as straightforward as he describes here.
Q: In what sense is it not?
A: That there's not — you can't say that, that — and he gets to that in the last where he implies that a file that's one-fifth the size of the previous file will be one-fifth as good, that's actually not true at all.
Q: Where he says, one-fifth the quality — "one-fifth the image quality as measured in information content from the source DVD."

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A: And the —
Q: Let me ask you a question that might help you out here.
A: Yes.
Q: Are you taking issue — are you saying that the term "quality" is a sort of — is difficult to define?
It doesn't necessarily mean the quality of the image you view?
A: The — there are two issues here.
Q: Okay.
A: Okay? One is that there is a subjective quality issue, as you've described. And that is true in any case.
Q: Okay.
A: Okay. But even, even beyond that subjective quality issue there is not a linear relationship, as he implies here, between what's typically in the industry called signal-to-noise ratio versus percentage of compression.
Okay. In fact, in the — and it's dependent on the algorithms used. So MPEG 2, if you go from 8 megabits per second to 9 megabits per second, you get very little gain in

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signal-to-noise on a normal picture. Okay?
So it — the curve is that. But if you go very low, the quality of signal-to-noise drops off very fast. Okay?
So it's more of a curve that goes like this, than it is straight linear curves as he would imply, particularly in the last sentence.
Q: Do you have a sense of where that drop-off occurs, in terms of loss of information?
A: That depends on the algorithm. I know in the MPEG 2 algorithm the knee of the curve curves somewhere around 1 to 2 megabits per second data rate and the average DVD runs at 4.5 megabits per second.
Q: Okay. And if you take a MPEG 2 and then use DivX, which was the MPEG 4 —
A: Yes.
Q: — essentially MPEG 4, to compress it further, where — when you have a double compression like that, where does the fall-off start to happen?
A: Divx does not actually double compression. What it would do, is it would decompression the MPEG 2 to a non-compressed form

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and then compress it with the MPEG 4 algoset. So then it would compress the decompressed image.
Q: Does the decompressed image, is there loss of data in decompressing the image?
A: There is no significant loss of data in the decompression steps. The loss of data occurred in the compression step.
Q: It has already happened?
A: That's correct. And it would occur again, obviously, in the compression step as you went from the decompressed form into the MPEG 4 form.
Q: Okay. So with that clarification, where does the fall-off occur with the MPEG 4?
A: I do not have the same level of knowledge in MPEG 4.
I can, however, tell you that MPEG 4 was created specifically to move that knee — A, to flatten that curve more. And B, to move that knee to much lower bit rates.
Q: Okay. But you don't know — Did it succeed in doing that, do you have any idea?
A: Yes. To my knowledge, it did. I

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mean, if I remember correctly, the target was to allow full-motion video at 128 kilobits per second. It's really intended to support modem-based video transfer and realtime video over modem.
Q: Streaming?
A: Streaming video over modem.
Q: Okay. Take a look at paragraph — Do you have anything more in paragraph 5 or is that sort of —
A: Hang on. Let me make sure.
Q: Okay.
(Witness looks at document.)
A: Yeah. I mean, my main objection is that it's not nearly as linear as would be implied here, as directly mathematical as would be implied here.
Q: Okay. Okay. Paragraph 6.
(Witness looks at document.)
A: I have no reason to believe that — I certainly agree with the first parts from personal experience. And I don't — I'm not familiar enough with the second half to comment one way or the other.

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Q: Okay. Now, finally paragraph 7.
(Witness looks at document.)
A: It's not clear to me that that first sentence follows from the previous section.
Q: Why not? Would you have to do the math or do you think there's something incorrect about it?
A: I don't have enough information here to make that judgment. And if this is based on — if the main profile that's described here is related to the MPEG 2 main profile I'm familiar with — in other words, the MPEG 2 algorithms are used for this comparison. And I don't know if they are or not.
Q: I think in paragraph 6 it says, the "comparisons was made by MPEG when evaluating MPEG 4 by showing samples to a test audience."
A: That's correct. And my assumption from reading this is that the ACE Profile and the Main Profile are profiles or particular uses of the various technologies inside MPEG 4.
Again, I don't know how those relate to the MPEG — how the — I don't know in detail how the MPEG 4 Main Profile relates to the MPEG 2

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Main Profile. But if I assume they are the same —
Q: Okay.
A: Okay.
— which is likely and possible — then these bit rates for the MPEG 2 Main Profile are extremely low for MPEG 2. It was never designed to run at these very low bit rates.
Q: Okay. But how is that relevant to whether the claim that these figure support an increased coding efficiency of about 40 percent for Divx?
A: Again, the relationships here are at very particular — very particular bit rates. So I don't — this is, again assuming a linear compression. I don't understand what they used for test cases here.
I mean, there's not enough information that I can definitively give you an answer for this, based on the material I have here.
MR. MERVIS: I would just note for the record that in paragraph 6 of this declaration there appears to be a URL typed in a link-type format which presumably would

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provide more information.
THE WITNESS: Right.
MR. MERVIS: And the witness has not seen that, as far as I know.
Q: Well, let me ask: Are you familiar with that Web site?
A: I'm not familiar with that particular Web site in detail, certainly not that html document.
Q: Okay. How about the "MPEG/standards/MPEG 4,/MPEG 4."?
A: I know that there are — that the MPEG standards are widely distributed and freely available, so I have no reason to believe that this information is not there.
Q: Have you ever reviewed them?
A: This?
Q: The MPEG standards. Not necessarily this at this Web site, but MPEG standards.
A: I have certainly reviewed MPEG 2 and MPEG 1 standards in detail.
Q: MPEG 4 standards?
A: I have not — I'm not familiar with them to the level of detail I am with MPEG 2

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standards.
Q: Okay. Well, let's then assume for purposes of analysis that the coding, the increased coding efficiency of about 40 percent for Divx is correct.
A: For an equivalent level of quality?
Q: Yeah.
A: Okay.
Q: Is the rest of the paragraph correct?
A: The rest of 7?
Q: Yeah.
A: I'm fine with his size comparison. I'll buy the little degradation in —
I would say a 40 percent reduction in size and transfer time is not virtually nothing at all. It's a significant win, even just based on the pure, exact copy. But if we go beyond that, okay?
Q: Is it practically speaking a significant win, given existing Internet access speeds, that you can take 7 gigabytes to 5 gigabytes, does that give you any kind of real victory there?
A: It shaves you — assuming 5-7 or 7-5

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is an actual 40 percent reduction, it saves you 40 percent of whatever time it is that it takes you to download, depending on what type of link you have.
Q: Let's say you go from 18 hours to 13 hours, is that a victory?
A: It's a pretty good win. If that's the time you're talking about.
Now, relative to the sentence where he says "in order to fit the newly Divx'd compressed bit stream onto even two CD's, it will be necessary to discard 74 percent of the recorded data."
I wouldn't describe what occurs in that way at all. You're not discarding 70 — you are making the file 74 percent smaller, but that does not in any way imply that you are making it — that you are losing three quarters of the information that's there.
Q: How are you making it 74 percent smaller?
A: You are doing stronger compression and introducing additional artifacts.

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But the reason compression works is because — that these compressions work at all is that you can, in fact, remove — and the whole process by which these compression mechanisms work, is that they take advantage of the characteristics of the human eyes and the human sensory, visual sensory system in order to remove what becomes essentially redundant information to the eye. Even though it's not redundant in a digital sense, in that you cannot recreate the original.
To a human it appears that you lose far less than you have actually reduced the size of the file.
Q: Okay.
A: So, for example, MPEG 2 in its normal use does, in — as on a DVD, it runs typically at around a 30 to 1 compression ratio. Okay, so there is only what, 3.3 percent — in the way he characterizes it here, I would say that 97 percent of the data has been discarded. But yet DVD is widely agreed to be the best video format in existence.
Okay. But yet I have, quote,

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discarded 97 percent of the data.
Q: Okay.
A: Okay. So that I don't agree with the implications of what's characterized here, although in a strictly technical sense he might — in a literal sense of what's written here it might be true. But it's not effectively true.
Q: Okay. So you're saying practically speaking the image quality isn't 74 percent worse.
A: That's correct.
Q: Okay. Now we're also, just to be very clear, you're talking about further compressing the remaining 3 percent of the data that's left after you've done the initial compression?
A: That's correct. You have decompressed it back to a viewed image as a human would see and are recompressing it to a new size, that's correct.
Q: But the viewed image that you've recompressed it to contains only 3 percent of the material — the information that you started out with before you applied MPEG 2?

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A: No. It is 3 — it is only 3 percent of the size. The resultant file size is only 3 percent of the original file size.
The actual, from a human visual perception standpoint?
Q: No, from a digital standpoint: How much do you lose?
A: You don't — from a digital standpoint you don't — again, that's kind of the point I was trying to make: You don't really talk about losing anything. You can only say the file was smaller or bigger and how much smaller?
But from a digital standpoint, in some essence you lose it all. Because there is no exact copies of any of the original data left. It is only — the nature of these compressions are, that you can't recreate the original.
Q: Uh-huh.
A: But the whole purpose of these compressions is to fool the human eyes into believing that they are identical. I mean, that's the art of creating these compression algorithms.
Q: Okay. In paragraph 7 you talk

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about —
MR. MERVIS: We're back to his now?
Q: Yeah, this is of yours.
A: Of mine?
Q: Yeah —
A: I'm sorry.
Q: — we're done with Mr. Stevenson.
A: We're done. We can close him up, and...
Okay.
Q: You talk about the examples "in defendants' papers rely on fairly low bandwidth devices such as 56K modem connections." Then you say "the real users of these technologies."
Now who are "the real users"? And "these technologies," I take it are the technologies like Divx and file-sharing technologies?
A: To a large —
Q: Take a look back and make sure that that's what you're referring to when you say "these technologies."
And then if you would answer —
(Witness looks at document.)

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A: Yeah, I would tend to agree, Divx and DeCSS and those type of environments.
Q: Okay. And who are the real users of these technologies?
A: Based on my reviews of the, certainly the development logs and other environments where these systems are discussed — again, this is based on my personal observations — it would appear that the bulk of the users are typically in college or college age, or are working in high-tech environments where these types of capabilities exist.
Q: Now you said, you referred to the development logs, that's Schumann Exhibit 2.
Do people who post messages in that development log identify themselves as college students or —
A: Some do, yes.
Q: So by reading those development logs you're able to determine that most of the people involved in the development of the Linux DVD player are college students?
MR. MERVIS: Object to the form of the question.

A: Certainly a substantial number of them were, yes.
Q: Okay. And did any of the people in the development logs say that they used Divx?
A: I don't believe in the development log DivX existed in the form it does now, during the period covered by these development logs.
Q: Did any of them indicate that they were engaged or wanted to be engaged trading movies on file sharing technologies?
A: I don't recall specific examples in these development logs, of the people who were working in these logs discuss — indicating that they desired to do those type of things.
Q: Okay.
A: However, they widely discussed that that would be a likely use of these types of technologies and that there were significant issues in that regard.
Q: Was that a predominant theme of these logs?
A: The legal ramifications and legal issues, and copying of content was widely and continuously discussed throughout the logs, yes.

Q: Would you call that a major threat or a minor threat?
A: I'm sorry, I don't understand the question.
Q: Was that one of the main points of discussion or was that a minor point of discussion?
A: I'm sorry, can you explain — are you still asking the old question, too?
Q: No. I'm talking about the development logs. Were the development logs focused predominately on the development of a Linux DVD player and such that the legal ramifications of copying were a minor subset of that discussion or was that a major part of the discussion?
MR. MERVIS: I'm sorry. I have to object to the form of the question.
MR. HERNSTADT: You can answer.
A: The threat of copying and the — the threat of copying and the issues of legal use of content were certainly not the predominant issue of discussion on the logs, but they were also a continual discussion.
Q: How many messages are in that stack of

postings?
MR. MERVIS: I assume you're not looking for an exact —
MR. HERNSTADT: Approximately. Mr. Schumann read them all, so I want to get an approximate —
MR. MERVIS: I'm not sure he counted them all.
A: Yeah, God, I didn't count them. I would hazard to guess there may be thousands.
Q: Okay. And would you say hundreds talked about —
A: I would — I mean, again, it's hazarding a guess. But, yeah, I would not be at all surprised if there were hundreds of discussions in there related to legal issues.
Q: Legal issues about copying and file sharing?
A: As well as other — legal issues related to the legality of playback of content and the creation of legal playback environments.
Q: Okay. One or 200, is that a rough guess?
A: Again, I'm hazarding a guess.

Q: Would that be a rough estimate?
A: It might be more. It might be 300, I don't know. I mean, I'm sure somebody can go in and count, but it's a tedious exercise.
MR. MERVIS: We'd be here for a long time.
MR. HERNSTADT: Yeah. Okay.
Q: And apart from the development log, which doesn't address Divx and doesn't address file-sharing technologies.
A: Yes.
Q: Apart from the development logs, your understanding of the real users of Divx and file-sharing technologies is based on what?
A: It's based on the — essentially — partially also based, essentially on the identical, conceptually identical problem that exists today in the music industry.
Q: You're talking about Napster?
A: Napster — well, not just Napster, but MP 3 files, which have been an issue far longer than — Napster is a recent innovation.
Q: Right.
A: Clearly there is, I think a

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significant body of evidence that the primary users of that technology exist in the college and the student domains.
Q: And so you're essentially speculating that the same users will become users of shared movies?
MR. MERVIS: Object to the form of the question.
MR. HERNSTADT: You can answer.
A: That — it is not pure speculation. I also have knowledge, personal knowledge of multiple individuals who gained access to movies through those mechanisms.
Q: Okay. Who are these individuals?
A: They — one of them is a cousin of mine, and the other one is a girl I talked to at a party on night. I don't recall her name.
Q: All right. So two individuals. Is your cousin a college student?
A: He's a brother of a college student. So I guess I know his brother, too, if you want it.
Q: So the college student and the brother of the college student trade movies on-line?

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A: I am aware that they have discussed that movies are downloaded. And they have viewed movies that have come and been downloaded over the Internet.
Q: Okay. And do they know what the source of those movies were?
A: I do not know. I didn't have a discussion with them about that.
Q: Uh-huh. And the brother is a college student, where is he a college student?
A: In Germany.
Q: Okay. Do you know what his Internet access speed is?
A: It's through his university.
Q: Do you know what that university's access speed is?
A: What their access what is?
Q: Access speed, their Internet connection?
A: I have no knowledge.
Q: And the girl at a party, was she a college student?
A: Yes, she was.
Q: Okay. Where is she a student?

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A: I think she was at William and Mary or one of the Virginia schools.
Q: And does she trade movies on-line?
A: She described viewing her movies on-line.
Q: She views them on-line, that's streaming video?
A: I don't know — I don't believe we discussed the exact source of how she got it, but she described watching it — getting the movie over the Internet and watching it on her PC.
Q: Does she download it and then watch it, or did she watch it as it came in live, in realtime from the Internet?
A: I don't know whether she — again, I don't know whether she downloaded it to her PC or played it off of a server, or someone else's PC in the university. I don't believe she gave any indication that it was streaming realtime off the outside Internet.
Q: What movie did she watch?
A: I don't — I don't recall.
Q: Did she tell you how big the file was?
A: No, we didn't discuss the size of the

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file.
Q: Did she tell what the quality was?
A: I think we discussed that the quality was not — it wasn't great.
Q: Now, how many movies did she watch like that?
A: We didn't talk about a quantity. But she described this as a not — not highly unusual occurrence.
Q: That she had done with other movies?
A: It was not a one-time event.
Q: Okay. And apart from those two, three people, what other basis do you have for saying that the real users of these technologies are college students?
MR. MERVIS: I'm not sure — Objection. I think it mischaracterizes the passage that we're talking about, but in any event, you can answer.
A: I mean, I think we talked about that there — again, it's based on a combination of factors: Personal experience of people's willingness to do that type of thing. The

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availability of the technology in that environment. And the clear demonstration of the willingness of people in that environment to engage in these types of clearly illegal access to people's copyrighted works through the music business.

Q: All of the people in those environments?

A: Certainly not all the people, no.

Q: What percentage of the people?

A: I have no direct knowledge.

Q: Are you, just to be clear, is this an area in which you are an expert?

MR. MERVIS: Excuse me, what's the "this," the demographics?

MR. HERNSTADT: Yeah, what he's just been testifying to. The three factors that he explained also influenced his conclusion that the real users were college students, which is the willingness of these people to — why don't you read it back to him?

(Record read.)

MR. MERVIS: And your question is whether he's an expert — with regard to any

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of those statements?

MR. HERNSTADT: Yeah.

MR. MERVIS: Okay, that's fine.

A: I would not — those are my personal conclusions and beliefs. I would not characterize myself as an expert on usage of these technologies.

Q: When did you graduate from college?

A: 1985.

Q: And did you do any postgraduate work?

A: Not, not formal postgraduate work. I've done summer hours and things of that nature.

Q: When was the last time you spent any appreciable time on a college campus with college students?

A: Oh, a long time ago.

Q: You talk about — okay. Let's look at the experiment — strike that.

Let's look at the statement that a 5 gigabyte DVD disk image can be transferred over 100 megabit per second ethernet link in under seven minutes."

I think you said before that that was not based on an experiment, that that is a

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theoretical maximum using the calculated, I guess, by using the size of the DVD disk image and the maximum, theoretical maximum speed of the ethernet link; is that correct?

A: That's correct. It's using the same formula discussion we had used in the previous deposition.

Q: Right. Is that a valid way to calculate transfer speeds on the Internet?

MR. MERVIS: I object to the form of the question.

MR. HERNSTADT: You can answer that.

MR. MERVIS: You can answer.

A: It's — yeah, it's a valid way of calculating speeds.

Q: Okay. Is it a — is it a scientifically valid way of calculating actual transfer speeds that can be achieved?

MR. MERVIS: Object to the form of the question.

A: It is a — it is a way of calculating an upper bound as to what can be achieved.

Q: Have you ever achieved the theoretical

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maximum transfer rate?

A: Gotten very close, yes.

Q: How close have you gotten?

A: I believe it would be on the order of 90 some plus percent.

Q: Tell me what the circumstances were.

A: It would have — again, I would have done this a long time ago. This is not relative to any exercise for this. This is my previous work in networking and the development of networks.

Q: Okay.

A: But at the time it's possible to achieve 90 percent or so throughput on an ethernet.

Q: A consistent 90 percent on an ethernet?

A: Under very controlled circumstances, yes.

Q: What are the controlled circumstances?

A: You need to be in an environment where you do not have — for ethernet networking?

Q: Right. This is not Internet, this is a LAN, right.

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A: This is a LAN. And this is a — the LAN, you need to essentially have — I guess — a dedicated circuit, if you will, in that LAN. Either by being the only people on the ethernet or using a switch to provide you, in essence, a virtual dedicated connection.

Q: If you use a switch so that you have a virtual dedicated connection, what happens when two people come together at the same switch?

A: For — I'm sorry, for what?

Q: If, for example, they were trying to — if they're sending something outside of the limited dedicated ethernet connection.

A: I'm sorry, I still don't quite understand the — I don't know how to map this to my knowledge of networking, what exactly — maybe you can phrase the question a different way. I'm not trying to evade you, I just don't —

Q: Yeah. I'm probably asking an inartful question.

You said that you would use a switch to get yourself a virtual dedicated ethernet.

A: A dedicated connection.

Q: Connection between two computers, say?

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A: Yes.

Q: All right. Let's say there's a third computer and —

A: Okay.

Q: — you want to go through the switch to the third computer.

A: So you want to have two computers talking to a single third computer?

Q: Right.

A: Okay.

Q: Do you get a slowdown at the switch, such that you're not running at the theoretical maximum anymore?

A: You would be — you would be constrained by the port from the third computer to the switch, not necessarily by the switch.

Q: Okay. Have you ever seen that type of efficiency on the Internet?

And we're talking —

A: Actually, I have seen, certainly seen, I don't know if it was exactly 90 percent, but I've seen very high efficiency ratios relative to my individual port speed, yes.

Q: Okay. And what were the circumstances

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of that?

A: I see that all the time with downloads of stuff from the Internet of files.

Q: What's your port speed?

A: On my dial-up modems, it's 56, typically 56. It depends, of course, on the connection that you get.

Q: And you get a download of what, of about 50 K?

A: You can get, yeah, 45 or 50 K pretty easily for big files.

Q: Okay. And for a file of like 1 gigabyte, does that get you very far?

In other words, doesn't it take so long to download a file of that size that that level of efficiency isn't particularly —

A: On a 56-kilobit connection?

Q: Yes.

A: It's a pretty long time to wait, sure. It gets there, but it takes a long time.

Q: In reality, in the real world, can you ever hope to achieve at or near the maximum transfer rate?

A: In switched networks with efficient

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switches — which many modern switches are — and with efficient ports you can — you should be able to achieve, real world, probably 80 percent. With good ports, 80, 90 percent.

Q: Now, is that statement based on any experience?

A: Absolutely.

Q: Okay. Is that based on any experience with, say, college campuses?

Because that's what we're focused on.

A: It's based on experience with — not with college campuses, but with corporate environments. Large corporate environments.

Q: Like what?

A: Like multi-building corporate campuses.

Q: And from any one port to any other port you can operate at about 80 percent of the maximum theoretical transfer speed of information?

A: It is — it is certainly possible to architect the network, if that's what the architecture is attempting to achieve.

Q: Okay. What I'm asking, though, is in,

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in the real world —
A: Uh-huh.
Q: — is that what occurs?
Do you architect networks so that you can operate at 80 percent of maximum possible transfer speed?
A: Ideally, you do, sure.
MR. HERNSTADT: Okay. Let's mark as Exhibit 7 the declaration of Olegario Craig.
MR. MERVIS: There's something called a supplement to that.
MR. HERNSTADT: Yeah, and there's a supplement to it as well.
MR. MERVIS: One exhibit?
MR. HERNSTADT: Yeah.
(Schumann Exhibit 7, copy of multipage document, the first page is entitled Declaration of Olegario L. Craig in Support of Defendants' Cross-Motion to Vacate the Preliminary Injunction, marked for identification, as of this date.)
(Witness looks at document.)
Q: Have you ever seen this before?

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A: Yes, I have. The first one I have. I don't —
Q: The supplement is — well, it's entitled "Description of hardware and methodology used for tests mentioned."
A: Okay. This was attached to the earlier one. Yeah, that I saw this —
Q: It's a single exhibit.
A: Yes. I'm sorry, yes, I saw this also before.
Q: Okay. Could you look at paragraph 4 where Mr. Craig states that "in order — "First, in order to assess Mr. Schumann's transfer-speed claims, I performed the following tests." The precise details of which are set forth in the supplement to the —
A: Yes, okay.
Q: Okay. Do you have any reason to doubt the results achieved by the tests set forth in paragraph 4?
A: Do I have any reason to believe that Olegario saw these results?
Q: Uh-huh?
A: I have no reason to believe that he

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would lie about the results he saw.
Q: Okay. And are these results that you would expect to see?
A: If I remember from my previous math on some of these, I would be quite surprised by some of these results.
Q: Because?
Why? Why would you be surprised?
A: The efficiency and the utilization of the systems was extremely low in some cases.
Q: Look at paragraph — subparagraph d, in particular.
Now, do you agree with this paragraph?
MR. MERVIS: Wait.
Q: Let's assume that he achieved the results that he said he achieved, okay?
A: Okay.
Q: Now, his conclusion is that "a single direct 'crossover' connection between two computers, using 100 megabit-per-second networking" — because he states that this is the "'absolute best-case possible' scenario."
Would you agree with that, in terms of getting a maximum efficient transfer rate?

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A: In terms of a theoretical connection of two machines, in terms of raw network infrastructure, I agree.
Q: Okay. And would you agree that you would never see this type of connection on a normal LAN?
A: Not — you would be — I agree that you would never see a physical crossover cable as he describes it here on a normal LAN.
But I do not agree that current networking technology does not do this. Because this is essentially what the switch technology does: Tries to implement these type of connections as much as possible.
Q: All right. You haven't been involved in networking for about five years; is that correct?
A: I haven't — I haven't — it hasn't been a day-to-day part of my job.
Q: Okay. And is it your testimony that current networks are designed to achieve, if not the physical direct one-to-one connection, a virtual one-to-one connection?
MR. MERVIS: I object to the form.

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A: They are — the components referred to as switch tubs or switched architecture attempts to — to maximize these types of interconnections to get as close to a direct connection as possible.

Now, there are, of course, many factors that go into the effectiveness and capability of these hubs, et cetera, to do that.

Q: See I'm asking about the real world —

A: I understand.

Q: — institution — or the real world construction of these networks, not the theoretical construction.

Because what we're talking about is: The feasibility of transferring large files over the Internet.

A: I agree, yes.

Q: So we have to deal with what's actually out there, not what's theoretically possible.

So then my question to you is: In the real world, is your testimony that switched hub networks that are being built today, and that have been built in the last five years, let's

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say, achieved this sort of virtual one-to-one connectivity?

A: Switched LAN networks do, to a large degree. Now there are — all of the hubs or the switch points have performance limitations that they cannot — usually cannot run all of their ports switched at exactly the same time. But they attempt to achieve that as much as possible.

Q: Okay. Does the result that Mr. Craig achieved on this absolute — what he called the absolute-best-case possible, single direct crossover connection between two computers surprise you?

A: I believe this still took — this still had a very low percentage of utilization. I would have to do the math again.

Q: Why? What would explain that?

MR. MERVIS: Explain what.

A: What would explain his level of utilization?

Q: (Nodding head.)

A: I quite honestly don't understand why it achieved — I'd have to do the math, but I

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believe this was approximately a 50 percent utilization or something on that order.

And it was — it seemed considerably lower than he should have been able to achieve. And I don't understand what the causes of that were.

Q: Have you ever tried this type of transfer?

A: I don't know if I have ever done a direct crossover. It's actually fairly hard to do, because they're not designed to do this.

But I have certainly done dedicated ethernet hubs and have done it through switches in the past.

Q: Okay. And have you transferred 1.5 gigabyte files over such a connection?

A: I don't believe I did that particular file size, no.

Q: Okay. And have you tested the efficiency of the transfer rate?

A: Yeah, I would have done it for the purposes of evaluating this type of hardware for efficiency.

Q: Do you have any specific recollection

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of this?

A: No. I can't point at any particular examples.

Q: Okay. Take a look at paragraph 8.

A: 4 (a)?

Q: 8. I'm sorry.

A: Excuse me.

Q: And I'd like you to read through that. He's talking about the University of Massachusetts. Now, Mr. Craig identified himself as the network administrator and software specialist in the department of computer science at the University of Massachusetts. So he's talking in paragraph 8 about the University of Massachusetts and the connections that are obtained there.

MR. MERVIS: To the extent that that's a question, I object to its form.

MR. HERNSTADT: It's not.

MR. MERVIS: Okay. Well, then, I suppose I —

Thank you for that explanation.

MR. HERNSTADT: Yeah.

I would ask that Mr. Schumann review

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connection as well as putting a heavy drain on its CPU, memory, and disk bus"?
A: Clearly a — as we earlier discussed, a single port that is shared at the same time for more than one download, or echo, or transfer of this activity, those resources would have to be shared in parallel. There's a finite pipe there, as there is a finite throughput from the computer. Now, there are, of course, multiple ways to overcome those limitations.
Q: Okay. Is it your understanding that in a college dormitory or college LAN, that each bed in each dorm room has its own 10 megabit connection, ethernet connection that is not shared with anybody else, that that pipe is not shared with anyone else's?
A: I would believe that that would — that that port, and I would assume there is such a port, would go to a switched hub in a wiring closet and would not be shared.
Q: And that switched hub, would every bed in the dorm go to that switched hub?
A: Assuming every bed had one of these ports —

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Q: Yeah.
A: — there would be an equivalent other end to that cable on a — not necessarily that hub, but one of a series, or it might be one rack or whatever of switched ports.
Q: Okay. So say you had a hundred dorm rooms in a dormitory.
A: Yes.
Q: And there was two ports in each room, two beds, two ports in each room.
A: Okay. 100 rooms.
Q: 100 rooms, so we had 200 ports.
A: Yes.
Q: And it's a 10-megabit ethernet LAN in the dorm.
A: To the rooms?
Q: To the rooms.
A: Yes.
Q: Okay. Now if each room — the two ports in each room went to a switch and that switch had a 10-megabit connection to the college — the campus backup.
A: Okay.
Q: The connection from the room to the

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switch, under that — and under that hypothesis, that connection is a unique 10-megabit pipe from the room to the switch and it's unshared?
A: That is correct, and it is unshared, correct.
Q: So the bottleneck, if any bottleneck, is at that switch where you have 200 pipes coming into the switch?
A: The switch itself is not necessarily the bottleneck. It depends on the architecture of the switch.
Q: Okay. Is it the size of the connection to the inter — the campus network?
A: Are you asking —
Q: I'm asking what the bottleneck would be, if there is a bottleneck.
A: I'm sorry, I understand the architecture. I don't understand what — can you describe to me where the computers are that are — where's the data flowing.
Q: You have 200 computers. And at any one time, let's say, you've got 50 of them operating. And some people are doing research and some people are typing and some people are on

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the Internet, and some people are communicating with other dorms and some people are communicating with labs, so that they can do homework and stuff like that.
A: Okay.
Q: And some people are downloading and some people are uploading.
A: Okay.
Q: And you've got a certain amount of traffic going through all the individual pipes.
A: Yes.
Q: And it all comes together at the exit to the dorm: What kind of impact does that have on the speed of the connections achieved?
A: Yes. If all of the data has to flow through a single 10-megabit connection out to the rest of the campus from that dorm, and, in fact, none of those machines are talking to each other, okay, then your bottleneck is that single port out to the other — out to the network, okay?
If an architecture — if, in fact, the network is designed that way, then you have a design flaw in the network.
Q: Okay. Is it expensive to put in

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switches?
A: Not as expensive as it used to be.
Q: Do you know how much a switch costs?
A: A four-port or five-port switched ethernet hub can be bought at retail for less than $100.
Q: What about the switch, not just the hub?
A: No, that's what I'm talking about, the switched hub. In low retail volume, it's less than $20 a port. I'm sure in commercial volumes, it's $10 a port or less. It's basically very cheap.
I went to college, too.
MR. MERVIS: Or for that matter, nursery school, too.
Q: Take a look at Chris Moseng's declaration.
A: Yes.
MR. MERVIS: Are you going to mark this?
MR. HERNSTADT: Yup, Schumann 8.
(Schumann Exhibit 8, copy of multipage document, the first page is entitled Reply

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Declaration of Chris Moseng in Support of Defendants' Cross-Motion to Vacate the Preliminary Injunction, marked for identification, as of this date.)
THE WITNESS: I'm sorry, I know you need that.
MR. MERVIS: Don't —
THE WITNESS: I just don't want to lose track.
Okay. 8, got it.
Q: Okay. Have you seen this one before? Take a look at it.
A: Yes, I have seen this one before.
Q: Okay. And what was your reaction to the transfer speeds?
MR. MERVIS: Well, let's give him a chance to look at it.
Take as much time as you need.
(Witness looks at document.)
MR. MERVIS: Off the record.
(Discussion off the record.)
THE WITNESS: Okay. I've read it. I'm sorry, do you have a question?
Q: Do you agree with paragraph 6?

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MR. MERVIS: I object to the form of the question.
A: It's — I have no reason to believe he did not achieve these particular results. But it seems look a strange comparison.
Q: Okay. Were you surprised — were you surprised by the results that he achieved, set forth in paragraph 10, at the rates of transfer that he achieved?
MR. MERVIS: In 10?
MR. HERNSTADT: Uh-huh.
(Witness looks at document.)
A: I'm trying to read this. I'm a little confused.
All the trials or just —
Q: Well, Trial 2 and Trial 3.
A: Okay. That was the one with the DVD drive.
Q: They both have a DVD drive.
A: Okay. Can I do some math?
Q: Sure.
A: I would say it appears to take longer than it should have.
Q: Do you have any explanation for that?

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A: Well, interestingly for Trial 2, where he read the disk from the CD, his machine has a 2X CD drive. So the maximum possible rate he could be running is approximately 22 megabits per second. And, in fact, in the scenario where he was doing the reading from a remote computer, he would likely end up paying a lot of C — he could — one potential explanation is he could be paying a lot of C time penalties. Because, in fact, the drive — because he's paying network delays and going to another machine. It's very difficult to set up an efficient stream in that type of environment. But in either case the limiting factor there would not be the network, but rather the speed of the DVD drive, which was, in fact, one-fifth the speed of his network.
Q: Was that the case for Trial 3?
A: No, that was not the case for Trial 3. Again, that was the case for Trial 2, if I understand his methodology correctly.
Q: So would that explain the difference between — a difference in results between Trial 2 and Trial 3, a 16-minute difference in the results?

A: It's not clear, without doing a lot of detailed analysis of this environment. I mean, it's very difficult to make — to know exact causes. But it's clear that the theoretical maximum there would be 22 something megabits a second. And it's highly unlikely you could sustain that, given that environment.

Q: And that's for Trial 2?

A: For Trial 2, correct.

Q: That comment does not apply to Trial 3?

A: That's correct. I have no reason to understand why Trial 3 took that long, because it's less than — it's just shy of over, I believe, 11 percent of the theoretical bandwidth available.

Q: Let me ask you, in paragraph 7 of your declaration, do you stand by the statement that a 5 gigabyte DVD disk image can be transferred over a 100 megabit per second ethernet link in under seven minutes?

A: Again, with the noted caveat, as I did, that I used in this example — so as not to confuse the issue I used the same type of

mathematics that had been used in both the deposition where — as well as in the earlier affidavits from the defendants where we were doing — the math that was being used was based on, essentially, theoretical mathematical — division of available bandwidth, okay.

Q: But that's not an accurate way to discuss the actual sending of DVDs over the Internet, is it?

MR. MERVIS: Well, I object to the form of the question.

MR. HERNSTADT: Fine. You can answer.

A: I don't believe you could find a way of — there is no definitive answer to your question —

Q: Okay.

A: — because any transfer is highly dependent upon a thousand variables.

Q: Okay. Are you ever, ever, going to be able to send a 5 gigabyte DVD disk over a 100 megabit per second ethernet link in under seven minutes on any college campus, on any university campus or on any business network in this

country?

A: You — I doubt you could achieve that efficiently, maybe it's possible with the right parts and equipment. Again, I don't know — I have not done tests on this stuff recently.

There is no — I don't believe there's any theoretical reason why you can't achieve very close to 100 percent efficiency.

Q: I'm not asking about theory. I'm asking: In the real world, will you, can you ever achieve that kind of a transfer speed?

A: It's unlikely.

Q: Okay. And if we're talking about the real users, who you have identified as college and university students, is the likelihood or unlikelihood of achieving that kind of a transfer speed or speed of transfer affected by any limitation on uploading or downloading that a university might impose on its LAN?

A: No.

Q: Okay. And now are you talking about —

THE WITNESS: I'm sorry, can you repeat that last — that last question?

(Record read.)

A: I should say not necessarily.

Q: Okay.

MR. MERVIS: Let's take a short break. I know you're building up a head of steam, but.

THE VIDEOGRAPHER: The time is 7:21 p.m. We're going off the record.

(Recess taken.)

THE VIDEOGRAPHER: The time is 7:39 p.m. and we're back on the record.

(Record read.)

Q: Okay. Take a look at paragraph 8.

A: I believe that answer was modified, right?

(Record read.)

THE WITNESS: That was the last exchange, right?

MR. MERVIS: Okay.

Q: Take a look at paragraph 8 of your declaration. And you say, "As may already be apparent, the most concentrated activity in the unauthorized digital copying and Internet transmission of pirated copies occurs among

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college-age students."
Pirated copies of what?
A: I don't think I was specific here. I was referring to — to — certainly to the widely dispersed knowledge of the Napster and the MP 3 copies and that stuff. Again, as we discussed previously, I have very little firsthand knowledge of movie piracy in that sense.
Q: Okay. Are you saying that MP 3 files are pirated copies?
A: Not all MP 3 files, no.
Q: Okay. And with respect to pirated copies of movies, is it your testimony that you have very little firsthand knowledge of any pirated copies of movies being transmitted on the Internet?
A: To the extent, yeah, to the extent I answered that issue earlier.
Q: Okay. And, in fact, you have no personal knowledge at all of any, quote, "unauthorized digital copying and Internet transmission of pirated copies"?
A: I don't believe that's what I testified earlier.

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Q: I'm asking you that: Do you have any personal knowledge at all of unauthorized digital copying and Internet transmission of pirated copies of movies?
MR. MERVIS: Of movies?
MR. HERNSTADT: Yeah.
A: Of movies.
I believe I testified earlier that I have had discussions with people who have specifically discussed having done exactly that.
Q: Okay. Of digital copying?
I think what you testified to before was people who downloaded movies from the Internet.
A: And, I'm sorry, could you help explain how you distinguish digital copying from downloading?
Q: Are these people who made digital copies?
I see digital copy — I'm reading "unauthorized digital copying" as something that people do.
Do you know anyone — do you have any personal knowledge of anyone making an

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unauthorized digital copy of a movie?
MR. MERVIS: Objection to the form of the question.
MR. HERNSTADT: Just answer the last question.
A: I don't understand how downloading something cannot involve — I'm not aware of any content owner who allows — I take that back.
In the instances I discussed it was clear that they were not authorized downloaded copies, and thus, they would have been unauthorized digital copying, because the act of downloading is typically an act of copying.
Q: Why is it clear that they were not authorized?
A: Because the individuals who I had this discussion with essentially said that they were free, they were unpaid for.
Q: Does that mean that they are, by definition, unauthorized?
A: That by its definition does not mean it's unauthorized, no.
Q: Okay. And my actual question was: Do you know of any person, do you have any personal

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knowledge of an individual making a digital copy of a movie?
A: Yes.
Q: Okay. Who?
A: As I just discussed, the people I had the discussions with and —
Q: Okay. I get what you're saying.
Let me be more precise with my definition: When I say "making a digital copy" I'm not talking about downloading, I am talking about creating a copy that is uploaded and then subsequently downloaded.
A: Oh, that's a very different —
Q: That's why I am asking it differently. No, you made it clear that I was not clear enough. That's why I'm restating the question.
A: I have no — right, in the definition you just said I have no personal knowledge of that.
Q: And with respect to these individuals that you've talked to who have downloaded movies from the Internet, in any case were these movies DVDs?

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A: Not to my knowledge.
Q: Okay. Do you know what the source of the movies was?
A: I do not know.
Q: Okay.
A: One way or another.
Q: Okay. And what is the basis of the statement that — rather than restate everything before.
Apart from everything that you said before, do you have any factual basis for stating that "the most concentrated activity in the unauthorized digital copying and Internet transmission of pirated copies," and let me add in of movies, because that's all we're concerned about here, "occurs among college-age students"?
MR. MERVIS: You're adding the word "movies"?
MR. HERNSTADT: Yeah.
MR. MERVIS: Okay.
A: Apart from what we have discussed previously, no, I have no additional.
Q: Okay. In paragraph 9 you talk about file-sharing technologies such as Gnutella,

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I-Mesh and FreeNet.
Now, just to clarify, your testimony is that: Of those various file-sharing technologies the only one that you have looked on for movies is Gnutella; is that correct?
A: Yeah, I believe so.
Q: Okay. And you found on Gnutella one movie that was described as being sourced from a DVD; is that correct?
A: I looked on Gnutella only for one title.
Q: Right.
A: And in the results that were provided to me I saw one entry that appeared to indicate it might have been sourced from a DVD.
Q: Okay. But you didn't check to see if that were the case?
A: That's — as I testified, I did not download it.
Q: Okay. And have you — I think I asked this question, so I won't.
Looking at paragraph 10, is DeCSS necessary to make a DivX movie, DivX movie, as we used that term.

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MR. MERVIS: Object to the form.
A: Is DeCSS necessary to make a DivX movie?
Q: Of a DVD:
MR. MERVIS: Same objection.
A: Do you have a particular DVD — it depends on the DVD.
Q: Of a CSS DVD.
A: And by "necessary," you mean it's the only methodology possible?
Q: Uh-huh.
A: No.
Q: There are other rippers that can be used to decrypt a DVD before applying DivX to it; is that correct?
MR. MERVIS: I object to the form of the question.
A: There are other mechanisms by which one could get digital copies, as we have discussed.
Q: Okay. In paragraph 11 — what is the factual basis for the statement in paragraph 11, in the first sentence of paragraph 11?
Apart from anything that we've talked

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about already.
A: The factual basis?
I'm sorry, I don't —
Can you clarify the question?
I'm sorry, I'm not quite —
Q: Yeah. What are the facts upon which you base your statement that "these file-sharing technologies," Gnutella, I-Mesh, and other ones you've listed, "enable users to highly compress and transmit unauthorized copies of movies over the Internet via broadband connections (any single transmission to a single student on a college campus will then suffice as a ready source for proliferation throughout that entire community)."
A: Ah. This is based on, as we discussed earlier, okay, that at some point, either at a dorm or at the entrance to the college or wherever, okay, you have a limited finite pipe.
Q: Right.
A: Which is much smaller than the combined bandwidth of even — of likely a fraction of the devices attached to the intranet of the facility. Okay?

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And so in that environment what you do, technologically, and what is apparently also done and is supported in the Gnutella environment, in particular, from what I saw of it: Is that you bring a copy to a single device internally, okay, then that device, for example, on a floor of a dorm that has a hub, now I no longer need to go through that single 10 megabit a second pipe out to the rest of the university. But now that floor can talk internally to itself.

And so if —

Q: At 100 megabits, let's say?

A: At 100 megabits, exactly. And now — so say he can serve three people at once. Well, you know, the — so now you put it on five machines, you can very quickly achieve sufficient bandwidth from with a very small number of machines, once you are internal to achieve the bandwidth necessary.

Q: Okay. And what's required for that is a sort of internal Gnutella as well, right?

A: No, that, that — I mean, there's many ways to move files internal.

Q: Right, but to inform other people

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where to find the files.

A: Gnutella is not necessary. It's convenient, but it's not necessary.

Q: So how would, you know, a student in Dorm A know that they could get a movie from the guy in Room 12 using a high-speed ethernet intra-dorm connection?

A: The guy in Room 12 knows the guy next door and told him: Hey, it's on my server, here's the name.

Q: Okay.

A: Go get it.

Q: Now, you don't have any actual knowledge of the architecture of network on college dormitories, do you?

A: I have no firsthand knowledge of how they're built. I have strong knowledge of how modern networks are built.

And I have no reason to believe that dorms are built in any other way.

Q: Okay. But you don't know?

A: Again, I've never built an internal college network, no.

Q: And you've never reviewed one?

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A: No, not firsthand.

Q: In paragraph 12, what is the impact of these new technologies?

MR. MERVIS: Well —

MR. HERNSTADT: And I'm quoting the first seven words or so, six words of the paragraph.

MR. MERVIS: Certainly you're free to read the entire paragraph before you answer.

MR. HERNSTADT: Oh, yeah.

(Witness looks at document.)

THE WITNESS: Okay, I've read it. I'm sorry, can you repeat the question?

Q: What's the impact of these new technologies?

A: The impact of these new technologies is that it makes it significantly easier, faster and more convenient to trade or to share movie files. And also — and/or allows them to be of higher quality.

Q: Okay. And do you have any evidence at all that this is actually happening?

A: Again, as we've discussed: I have

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no — I'm not an expert on how widely these are used.

This is a discussion of the impact on the technology and the enablement of that capability is — is significant.

Q: Okay. So when you say "the impact of these new technologies" you're talking about the possibility that it can occur, not that it is actually occurring. And by that "it" I'm referring to the transfer of high-quality DVD movies on the Internet.

A: Uh-huh.

Q: Okay. Which of the technologies were not publicly known at the time of the January 20th hearing?

A: I don't believe — and this is my own — I was not aware of any of the — I was not aware of DivX at that time. I was not aware of — I don't believe Napster existed or was even — maybe it did exist, but it certainly wasn't widely reported or — wasn't known to me.

Q: Napster?

A: Napster.

Q: As of January 20th, 2000?

A: It's possible it's there. I don't recall being — I mean, I wasn't looking for it. So I wasn't — I mean, I don't routinely go share this stuff, so.

Q: Is it fair to say that by "publicly known," you mean known to you?

A: I guess to that degree, in that case, yeah, I guess I would have used "publicly known" as known to me through my reading of the — as a reasonably informed member of this community.

Q: Okay. Have you done any research to discover when DivX was first created and made available on the Internet?

A: No, I have not.

Q: Have you done any research on when Gnutella, or FreeNet, or Napster, or any of the file-sharing technologies you've discussed have been — were created and made available on the Internet?

A: I have done some research into some of those technologies.

Q: Which ones have you researched?

A: I looked at the origin — I looked at the origins of Gnutella, FreeNet — I think I

looked at the origins of Napster, and certainly, to some degree, the origins of Wrapster.

Q: Okay. And when were these technologies created?

A: Again, I can't recall that offhand.

Q: Do you have any documents that might — about this research that you did?

A: I believe there is a document that I wrote that discusses this. But it was for a different client.

RQ MR. HERNSTADT: Okay. I would call for the production of that. And to the extent that you need to redact it to preserve the confidentially of the name of the client and the nature of the — of anything that's confidential, that's certainly appropriate. There is a confidentially order in place as well.

MR. MERVIS: I mean, that's fair. We'll take it under advisement. I seem to recall reading this in the prior deposition. So it's not an original idea.

But I have a list of certain other

things that Mr. Garbus was interested in this morning.

MR. HERNSTADT: Okay.

MR. MERVIS: But I know you guys are busy, but to expedite the process, if I can get a letter — I mean, I realize that's difficult, and I'll certainly go with what I've got.

MR. HERNSTADT: Thank you.

MR. MERVIS: But I can't promise you that it's going to be a — you know, that it's going to word for word match what you guys have asked for today.

MR. HERNSTADT: Fair enough.

Q: Paragraph — wait a second. What's the basis for your statement that "file sharing of MP 3 audio recordings, which until recently were confined to the fringe elements of the Internet"?

A: Where are you reading? I'm sorry.

Q: That's in paragraph 12, towards the bottom of the paragraph.

A: Paragraph 12. I, to be honest with you — I'm

getting tired. I can't tell you exactly what caused me to write it that way.

Q: Did you write this or did Bill Hart?

A: I believe —

MR. MERVIS: I object to the form. But you can certainly answer it.

A: I mean, I can't tell you exactly. I know I wrote a fair amount of this portion of this as drafts.

Q: Okay. In paragraph 13 why did you pick "You've Got Mail"?

MR. MERVIS: I asked that same question.

A: I mean, there was no particular reason. It was a handy — I mean, it was a movie I had handy.

Q: In terms of compression, in terms of compression technology, I should say, do you get a better quality image after compression with a movie that tends to have — that has mostly static scenes, as compared to a movie with a lot of action scenes?

A: That depends on the compression technology. It's an art form, but in general

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motion is — causes — requires a higher or a lower compression ratio to compress motion.
Q: So a movie like The Matrix would be — strike that.
A movie like The Matrix would have, perhaps — would have less — lesser quality at the same compression ratio than a movie like You've Got Mail; is that a fair statement?
A: No, not necessarily at all.
Q: Okay. Why is that?
A: Because motion does not equate to action, if you understand what I'm saying.
Q: Okay. Well, based on your knowledge of these two movies, because you've — I think testified that you — based on the —
A: Right.
MR. MERVIS: I'm sorry, I object to the form of the question, to the extent that there is a question. I didn't hear one, but you can answer.
MR. HERNSTADT: Mr. Schumann understands, I think.
A: You would have to analyze the two movies in detail to have any sense of that, okay?

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But You've Got Mail has many elements that are, in fact, difficult to compress effectively.
So, for example, the scenes where they typing and the text is moving on the computer, okay, that is — it's not action in the sense that Matrix has action, but there are many, many, many individual elements that are moving. Okay?
And so — as I said, you can't equate action as it occurred in The Matrix with compression. But yes, movement is what makes compression more difficult, okay. But a scene of fog moving, okay, is, in fact, one of the hardest things to compress, but it has no action.
Q: Okay. I understand that.
A: So I can't describe those two movies in the comparison that you want.
Q: Well, based on your knowledge of compression technologies, would you expect to get the same quality after you've applied DivX to a decrypted version — decrypted DVD version of The Matrix, as you would a DivX'd decrypted version of You've Got Mail?
A: With what other — are there other

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constraints?
MR. MERVIS: All things being equal?
MR. HERNSTADT: Yeah, all things being equal.
A: I have no way of describing that one way or another. I don't have enough knowledge to give an answer on that.
Q: Okay. In paragraph 16, we've talked about this a little bit, in paragraph 16, in about the third line down, and feel free to read as much of it as you want to, you say, "There are a considerable number of DVD disks that are released without CSS encryption and can be and have been used in the development of the DVD player function."
A: Uh-huh.
Q: Are you talking about the 20-odd disks that you found?
A: Yes.
Q: Okay. Now, have you read Matthew Pavolovich's reply affidavit, which we can mark as Exhibit 9.
(Schumann Exhibit 9, copy of three-page document entitled Reply

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Declaration of Matthew Pavolovich in Support of Defendants' Cross-Motion to Vacate the Preliminary Injunction, marked for identification, as of this date.)
(Witness looks at document.)
A: No, I have not reviewed this.
Q: Okay. Let me ask you to take a look at paragraphs 3 and 4, just as a way of a little housecleaning, I guess.
A: 3 and 4?
Q: Yeah.
MR. MERVIS: Oh, yeah.
(Witness looks at document.)
THE WITNESS: Okay, I've read 3 and 4.
Q: Now, in paragraph 3 Mr. Pavolovich addresses your critique in paragraph 13 of the June 1st declaration of his statement in paragraph 10 of his first declaration. And explains that there was a typographical error.
As corrected and as explained in paragraph 4, do you agree with what Mr. Pavolovich now says?
MR. MERVIS: I object to the form of the question.

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You can answer, if you can.
A: First of all, I do believe he did more than fix a typographical error.
Q: Uh-huh.
A: So I don't agree that he just fixed a typographical error.
Q: What did he do?
A: He changed the word "unencrypted" to encrypted.
Q: Did he do anything other than that?
A: Yes, he did.
Q: What?
A: He changed the later part — latter part of the sentence. The previous sentence said "would be futile, due to the fact that there is no known player that can play from anything but a DVD disk." He changed that to read, "due to the fact that there is no known player that can play a DVD movie from anything but a DVD disk."
Q: Okay. Was your critique of his first sentence based on the absence of the words "a DVD movie" or the use of the word "anything" instead of "a DVD movie"?
MR. MERVIS: And I guess it would be

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fair to let Mr. Schumann look at paragraph 13 of his declaration, if he needs to before answering the question.
MR. HERNSTADT: Sure.
MR. MERVIS: I'm not even clear — this is the second supplemental he's talking about, right?
MR. HERNSTADT: (Nodding head.)
A: I believe my original issue was with the word "unencrypted" or — I discussed the issue of unencrypted.
Q: Right.
A: However, without putting this statement back into context, cannot tell you what the impact is of adding the additional changes to the sentence.
Q: Okay. How about his statement in paragraph 4, do you agree with that?
A: In what — in what sense?
Q: Is that an accurate statement?
A: I'm sorry, "accurate" in what sense, technical feasibility —
Q: Is it true that — yeah.
A: — existence of such, what method —

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I'm sorry.
Q: Is it true that attempting to play the encrypted content of a DVD would yield errors, because the DVD player application cannot — I'm sorry, can play the encrypted content of DVD files on a hard drive would yield errors, because the DVD player application cannot decode the DVD movie video that is encrypted?
A: For a legal player this sentence — this paragraph is correct.
Q: Turn to paragraph 6, please, in which he discusses unencrypted movies.
MR. HERNSTADT: And while you're looking at that, why don't we change tape. Thank you.
THE VIDEOGRAPHER: The time is 8:08 p.m. and this completes tape No. 3 of the videotape deposition of Robert Schumann.
(Recess taken.)
THE VIDEOGRAPHER: The time is 8:09 p.m. and this is tape No. 4 of the videotaped deposition of Mr. Robert Schumann.
A: Okay, I've read 6.

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Q: Is that, as far as you know, correct?
MR. MERVIS: I object to the form.
A: Not its entirety.
Q: Okay. What's incorrect?
A: I don't understand — I don't understand why he believes a tool needs to be necessary to determine whether the disk is encrypted or not encrypted.
Q: Okay.
A: And further, I know more than the 20 movies here, but...
He is essentially correct: A large percentage of the movies are encrypted.
Q: If you were building an open-sourced DVD player that was not licensed with CSS, would you have to use encrypted disks to test if you had succeeded in building in a decryption facility to the DVD player?
MR. MERVIS: I object to the form of the question.
THE WITNESS: I'm sorry, could you repeat that question, please?
(Record read.)
A: Yes.

Q: Okay. Let's turn, if we may, to Exhibit 4, which is the report that you did. And Schumann Exhibit 3.
A: Exhibits 3 and 4?
Q: Uh-huh.
MR. MERVIS: 3 is what?
MR. HERNSTADT: 3 is the first declaration, the January...
A: Okay.
Q: Okay. And turn to paragraph 6 of that.
A: Of which one, 3 or 4?
Q: Your declaration. I'm relatively certain your report was not in paragraphs.
A: Right now I couldn't tell you —
Q: I understand.
A: — you point me and I'll...
MR. MERVIS: Collapse.
Q: Fair enough.
A: Paragraph 6.
Q: I stand chastised.
The first sentence of paragraph 6 you say, "There is nothing about the DeCSS utility that suggests any purpose to its design or

development other than to cause the decryption and subsequent copying and storage of CSS-protected DVD content."
A: I'm sorry, wait a minute. Exhibit 3?
Q: Yeah.
A: No, Exhibit 3 is the supplemental declaration. We had this earlier.
MR. MERVIS: That's actually true, yeah.
MR. HERNSTADT: I'm sorry, let's mark this as Schumann 10. I only have one copy of that. And please don't look at anything except for the declaration.
MR. MERVIS: You can give me everything else.
THE WITNESS: I mean, I actually have a clean copy, if that helps.
MR. MERVIS: That's up to Mr. Hernstadt.
MR. HERNSTADT: If you don't mind, I would prefer to use that as a marked copy, because then we could leave it as a marked exhibit.

THE WITNESS: I don't mind that.
MR. MERVIS: I'm fine with that.
MR. HERNSTADT: Thanks.
THE WITNESS: Let me confirm it's clean, but I believe it's clean.
THE WITNESS: This is the original?
MR. HERNSTADT: I may have to break my promise.
This is the January 19th.
THE WITNESS: Mine does not have exhibits.
MR. HERNSTADT: That's fine. Let's go with that without exhibits.
MR. MERVIS: At least it doesn't come from the Internet.
MR. HERNSTADT: What are you talking about?
That was in the spirit of the case.
(Schumann Exhibit 10, copy of multipage document, the first page is entitled Declaration of Robert W. Schumann in Support of Reply Memorandum of Law in Further Support of Plaintiffs' Application for a Preliminary Injunction, marked for

identification, as of this date.)
MR. HERNSTADT: Wait, this is all off the record, I hope.
(Discussion off the record.)
Q: Turning to paragraph 6, Mr. Schumann.
A: Okay. This text seems —
Can we read that again —
Q: Go ahead and read it to yourself, the first sentence. I won't burden the record further.
A: Okay.
Q: Okay. Is that conclusion based solely on an examination of the DeCSS utility?
MR. MERVIS: The first sentence?
MR. HERNSTADT: Yeah.
A: I don't recall exactly what basis — what exact reasoning I wrote or what exactly I thought exactly as I said this. But I continue to agree with what it says.
Q: Okay. And is that based also on the review you made of the postings on the Linux list?
A: No. This would relate specifically to what DeCSS is and does as a utility.

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Q: Okay. And you go on to say that "despite claims that DeCSS was developed to enable compatibility with the Linux operating system, there are a number of reasons why this is not true."
Was there anything in the logs that you reviewed that would suggest that DeCSS was part of an effort to build a Linux DVD player?
MR. MERVIS: I object to the form of the question.
You can answer.
MR. HERNSTADT: You can answer.
A: DeCSS was certainly adopted by some of the members of the development community. But it was, to my analysis, it was — did not appear as a result — based on what's in the logs, it was not created, if you will, within the Linux community.
Q: Was DeCSS a result of the analysis and implementation of the CSS algorithm?
THE WITNESS: I'm sorry, can you read that back, please?
(Record read.)
MR. MERVIS: I object to the form of

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the question.
MR. HERNSTADT: You can answer it.
A: Could you better explain what you mean by "analysis"?
Q: I'm using your words here. Take a look at Exhibit 9, the executive summary of your —
A: Thank you. Context. Context.
MR. MERVIS: Well, maybe I wouldn't object.
THE WITNESS: Well, I have context.
MR. HERNSTADT: I'm sorry, 4, Exhibit 4, but you knew what you were looking for.
A: Exhibit 4. The analysis overview?
Q: No, the executive summary, page 4, before that.
A: Before that.
Q: On the second line you say — well, you say first that "Cinea was engaged by the MPAA to review Linux DVD development forums to determine what, if any, role was played by group members in the breaking and release of the DVD CSS encryption system."

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Now, when you say "release of the DVD CSS encryption system," what are you referring to, is that DeCSS?
A: DeCSS is certainly a utility that implements the CSS encryption, and by definition here, I'm sorry, the decryption of it as well.
Q: Okay. But when you say "the breaking and release", "release" I'm reading as to say the release of some kind of utility?
A: No, the publication in utility, as well as any other form.
Q: You say, "Based on a detail analysis, Cinea believes that some members of the Linux development community materially participated in the analysis and implementation of the CSS algorithm for the purposes of enabling DVD playback within the Linux environment."
Okay?
A: Yes.
Q: And what I asked was —
MR. HERNSTADT: Well, here, can you go back to that question?
(Record read as follows:
"Question: Was DeCSS a result of the

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analysis and implementation of the CSS algorithm?)
A: So you are now — So my question to you was: What do you mean by "analysis"?
And so you are specifically referring to the analysis performed by the Linux development community based on logs, as I describe it here in this paragraph?
Q: I'm not talking about their specific analysis. I'm talking about "analysis" as you used the word analysis in here. In other words, I'm not tying it to a particular event. I'm talking about the type of analysis. You used the word analysis to describe actions by these people, not actions in connection with specific material —
A: Okay. Thank you, now I understand.
MR. MERVIS: Notwithstanding your understanding, I object to the form of the question.
MR. HERNSTADT: That's fine. His question or mine?
MR. MERVIS: I only once objected to

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my own witness's question, and it didn't go over very well.

MR. HERNSTADT: Do I confess now?

MR. MERVIS: No, you can wait. Talk to your wife.

MR. HERNSTADT: Go ahead.

A: DeCSS appears to have been — again, I have no firsthand knowledge of how DeCSS was created — appears to have been the result of a reverse engineering process of the algorithm, which is an analysis, in the sense that I describe it here, of how the system works.

Q: Okay. You say then that "there is no evidence that individuals in the Linux Group provided critical breakthroughs."

A: Yes.

Q: And "that the primary technical breakthroughs in Drive Authentication and Bulk content decryption were developed outside of the Linux development groups."

Now, what's the basis for that statement?

And I'm specifically addressing outside the group and inside the group, group

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members and outside the group.

A: Yes.

The basis for that statement is that — is based on specific — on postings within the group where in both cases Derek Fawcus, who was an active member of the development group, was provided with critical pieces of code or critical routines which enabled him to then create Linux versions of said functions. And the people who provided such stuff in the first case appeared, essentially out of nowhere, and provided it and disappeared never to be heard from again. In the alias — again, there is no guarantee. This is — as it describes here, it's completely based on the documentation as it exists in these logs, okay.

Q: You did no research other than what is in the logs that were provided to you by the MPAA?

A: That's correct. Which is exactly what this very specifically says.

Q: I understand that.

And these logs are not complete logs, these are selections from the archives of the

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Linux and —

A: Yeah, these are subsets of what is in the complete archives.

Q: Okay. And we're talking about — the two logs that we're talking about are the Linux DVD and the Livid Dev discussion forums; is that correct?

A: Yes. There is also — no, there is a few other documents in here around Frank Stevenson's papers and some of his work is in here, if not — I don't know if it's in this log format.

Q: Okay. Well, Stevenson posted to the log, right?

A: Yes, he did.

Q: And did he post his crypt analysis, or did he link to it, post a link to it?

A: I believe he posted it, but in the form it is in the written — or the printed form that I receive, it is in an encoded form. And so it was unreadable in the form that was in the log. But the paper I was provided included readable versions of those relevant documents.

Q: All right. So you were not provided

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with anything that wasn't posted on the log, posted on the two Linux groups that we're talking about?

A: I don't believe so. But again, these other — I don't know absolutely. Effectively it's related. To my knowledge.

Q: All right. The only thing that may be different is something from Frank Stevenson because there is a different printout in order to get his crypt analysis?

MR. MERVIS: I object to the form.

A: It's theoretically possible, but I have no reason to believe it's not related to what he discusses in the logs.

Q: All right. And you — based on your reading of the archives, you split the different participants in the two Linux forums into Linux development community individuals and into external contributors; is that correct?

A: I believe that's what I did, yes.

Yeah.

Q: Okay. And you say that the "external contributors," you describe them as follows, the general posters — "The following posters were

outsiders to the Linux development community who in general came into the discussion for brief periods of time, often providing critical source and information. These individuals generally provided no support to the Linux development efforts other than the release of information to the Linux community. They are likely members of the more general hacking community and in many cases posted anonymously," right?

A: Yeah.

MR. MERVIS: I'm sorry, where were you reading from, just for my edification.

MR. HERNSTADT: External Contributors, page 9 at the bottom, S 10014.

MR. MERVIS: Thank you.

Q: And the basis for that conclusion is the number of times the contributors appeared in the postings; is that correct?

A: Not just the number of times, but also the nature of the interactions during those postings, and the discussions about those postings.

Q: Okay. And did you do any — well, strike that.

Okay. Let's look at page 8, which is S 10013, Aaron Holtzman, who you say is one of — a member of the Linux development community.

Did he contribute anything to the crack of CSS?

MR. MERVIS: Well, I object to the form.

You can answer.

MR. HERNSTADT: Yeah, go ahead.

THE WITNESS: Can you reread that question, please?

(Record read.)

A: He did not — I'd have to look at his posts in detail. But based on my writings here and my notes and results, he did not materially contribute to the cracking, if you will. He was — he participated in looking at the results some and perhaps some refinement, but I don't believe he materially contributed. Based on what's — again, this is all based on what's in these logs.

Q: Uh-huh. Now, if you look at the — Holtzman, he — in Appendix B, which is reviewed as in posting name order. You see that between

June 27th and October 27th he contributed seven posts. And those posts were on June 27th, July 15th, then nothing until October 14th — excuse me, October 4th, October 26th, and then three on October 27th.

And the first two of those postings, in June or July, were to Linux DVD, and then the rest of them were to Livid development, correct?

A: Yeah. But I don't believe this list was an attempt to itemize every posting in the logs by every — in the printed logs by person.

As this says, "review notes." So this is my notes of relevant events in the log.

Q: Right.

A: As I made them, as I went through them.

Q: Okay. And these are — these as "relevant events in the log, review notes," these are the notes upon which you based your analysis set forth in the body of your — of this Linux CSS development analysis paper?

A: Of the body of — the description of what Aaron did, or what he was involved in.

Q: Yeah.

A: These descriptions were written as a combination of going through the review notes and then also leafing back through, looking at notes in the paper and looking at other postings.

Q: Right.

A: They are to a significant degree, if you will, a summarization of the results of the individual notes.

Q: Okay.

A: But, for example, in Aaron Holtzman, I would believe that he had a series of posts relative to the AC-3 subsystems that I would likely not have taken notes on, because they were not relevant to the CSS issues.

Q: Okay. Is it — Let me ask you that in a different way. If you look at page 2 under the "Analysis Overview," the fourth paragraph down, that sort of restates what you said on the executive summary.

A: It sounds like it's basically a copy.

Q: Okay. Referring to that one, is it your testimony that your conclusion "that the primary technical breakthroughs" — and I'm

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reading from it now — "in Drive Authentication and Bulk content decryption were developed outside the Linux development groups" —

A: Uh-huh.

Q: — means that DeCSS was not developed in connection with a project to build a Linux DVD player?

A: Based on the analysis of the information in these logs it is my considered opinion that DeCSS was not created for the purposes of enabling DVD playback in Linux.

Q: That wasn't my question. I'm not asking was it created for the purpose of enabling DVD playback. I think we've established that it's not a player itself. Now what it does is decrypt the content —

A: Okay. I'm sorry, I missed the nuance in your question.

Q: It wasn't a nuance. What I'm saying is that as part of the project to build a DVD player, a Linux DVD player.

A: No, it was not. Based on my analysis, I would not come to that conclusion, no.

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Q: Had you ever looked at either of the Linux forums before you got into— before you were hired by the MPAA to review the postings that they sent to you?

A: Not to my knowledge, no.

Q: Do you spend a lot of time on forums?

A: No.

Q: Do you spend any time at all on forums?

A: Not really, no.

Q: Do you look at slash dot?

A: Only since I started on this project.

MR. HERNSTADT: Off the record.

Q: Is it fair to say that you don't have any expertise in forums?

A: Expertise —

MR. MERVIS: I object to the form of the question.

MR. HERNSTADT: Okay.

A: Expertise in what sense?

Q: In the analysis of forums?

MR. MERVIS: Object to the form of the question.

A: What expertise would I — I guess I

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don't — I am comfortable that I have the expertise to understand and follow the threads of these discussions.

Q: And what I'm talking about is expertise in the types of persons who communicate — who participate in forums and the rules of the communications on forums.

MR. MERVIS: I object to the form of the question.

A: I guess I don't — I don't... I don't believe I am missing any expertise that would make me capable or appropriate to do the review of these forums.

Q: Okay. Is it your testimony that you distinguish between members of the Livid development community and outsiders to the Livid development community on the basis of the technical information contained in their postings?

A: I don't believe that that's what my paper used as a differentiator, no.

Q: Okay. Did you use that as a differentiator?

A: I don't believe I did.

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Q: Okay. What did you use as a differentiator?

A: What I used — and we can go look at — I believe I wrote a description of how I differentiated them.

The text I used, again, with the caveat that this whole paper was written in the context of what's contained in the written logs.

Q: Okay.

A: What I wrote was — how I define the Linux development community was the individuals who were regular members of the community or the discussion boards "whose overriding efforts and interests were in the development of DVD playback capability within the Linux environment."

I don't believe I referenced technical capability at all.

Q: Now, where is that? I'm sorry?

A: On page 7 under "Involvement of Key Individuals."

Q: Then you say for external contributors, that they're outsiders because — they are outsiders "who in general came into discussion for brief periods of time, often

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providing critical source and information. These individuals generally provided no support to the Linux development efforts other than release of information to the Linux community. They are likely members of the more general hacking community." Okay?

A: Correct.

Q: But if you compare, let's say, Jon Johansen, who made seven postings to the Livid forum in October and November — September, October and November —

A: Yes.

Q: — and Aaron Holtzman, who also made seven postings — excuse me, six postings — hold on a second, I'm sorry — he made seven postings. One in June, one in July and five in October, including— four of which were bunched into a two-day period.

In terms of their — in terms of their coming into the discussion for brief periods of time; isn't that the same?

MR. MERVIS: I object to the form of the question.

MR. HERNSTADT: Fine.

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You can answer.

A: As I previously testified, you are misreading the data in this report.

The Appendix B and Appendix A do not — I don't know the text, but they certainly do not represent all of the postings of these individuals. They are only specific postings upon which I made notes while I was reviewing the materials.

I believe if you were to go through these documents again and count the number of postings by individual, you would find that Aaron Holtzman could have hundreds of postings. He was a very active contributor to this forum on an ongoing basis.

Q: Okay.

A: And the reason that Jon Johansen has seven individual call-outs here and Aaron has six or seven, or whatever, is because Aaron had little relevance to CSS, and Jon Johansen, of course, had significant relevance, and I probably made notes in every post because it was critical to the purpose of what I was looking at. Specifically for this report.

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Q: Okay. And how many postings did Jon Johansen have?

A: He may have had more than seven, but it was not many more than that. It may be very close to Holtzman's.

Q: And every single one of these postings are on Linux forums, specifically Linux DVD development forums?

MR. MERVIS: Object to the form.

You can answer?

A: The postings that are referred to in this note are, if I believe correctly, they should all — all are, in fact, from this text, because that's all I had. He may have made posting elsewhere that I'm not aware of. I have no representation that this is all he's ever done.

Q: Do you know if the CSS crack is used or is being used in the development of the Linux player?

A: If the CSS crack is being used?

Q: Uh-huh.

A: I — based on what I saw in the logs, it is my understanding that the — some of the

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individuals used that to create unencrypted copies of movies.

Q: Yeah, that wasn't my question.

A: Which they then used to, I guess, test some of their stuff.

Q: Okay. What about testing the decryption facility or building a decryption facility in a Linux DVD player?

MR. MERVIS: I object to the form.

A: The use — are you asking whether DeCSS would be used to test the decryption.

Q: No.

A: I'm sorry.

Q: What I'm asking is is the CSS crack, i.e., the breaking — I want to use your words here. Hold on a second.

The breaking and release of the DVD CSS encryption system —

A: Yes.

Q: — that is described in your report, based on your review of the Linux development — DVD development logs from June through, I guess, November of 1999 —

A: Uh-huh.

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Q: — is that breaking and release of the DVD CSS encryption system are being used in the making of a Linux DVD player?
MR. MERVIS: Object to the form.
A: I would presume it is, as it's — as we discussed earlier a necessary — the ability to decrypt CSS is a necessary component of a DVD player that can play CSS-protected DVD movies.
Q: Let's go back to your statement in paragraph 6.
A: Which exhibit?
Q: Of Schumann 10.
MR. MERVIS: Schumann 10?
This is —
Q: Let's go to paragraph 11, I'm sorry, of Schumann 10.
MR. MERVIS: Oh, this is the first declaration.
A: Paragraph 11?
Q: Uh-huh. The second sentence down you say — you're referring to particular pages that you'd pulled out of the Schumann 2, the logs, in general.
A: Uh-huh.

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Q: And you're referring to particular pages or particular postings, and you say, "These and the other material I have reviewed reveal that DeCSS was not an outgrowth of so-called Linux compatibility developments, but, instead, was made available from outside of the Linux community."
A: Yes.
Q: The conclusion — that conclusion was based solely on postings on Linux development, DVD development forums, correct?
A: That's correct.
MR. HERNSTADT: I'm done.
MR. MERVIS: I'm glad to hear that.
MR. HERNSTADT: Do you have any question, Mr. Mervis? Don't you want to start doing cross-examination.
MR. MERVIS: No, I have no questions.
MR. HERNSTADT: Mr. Schumann, thank you very much, you've been an excellent witness and a good sport.
THE VIDEOGRAPHER: The time is 8:45 p.m. on July 11th, 2000. This completes the videotaped deposition of

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Robert Schumann. And this also completes tape No. 4.
(Time noted: 8:45 p.m.)

ROBERT SCHUMANN

Subscribed and sworn to before me this ___ day of __, 2000.

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CERTIFICATE

STATE OF NEW YORK)
: ss.
COUNTY OF NEW YORK)

I, DONALD R. DePEW, a Registered Professional Reporter, Certified Realtime Reporter and Notary Public within and for the State of New York, do hereby certify:
That ROBERT SCHUMANN, the witness whose continued deposition is hereinbefore set forth, was previously duly sworn and that such continued deposition is a true record of the testimony given by the witness.
I further certify that I am not related to any of the parties to this action by blood or marriage, and that I am in no way interested in the outcome of this matter.
IN WITNESS WHEREOF, I have hereunto set my hand this 13th day of July, 2000.

DONALD R. DePEW, RPR, CRR

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1	Copy of document entitled Broadband E-Battle from Deutschebank	207
2	Copies of development logs	236
3	Copy of multipage exhibit, the first page is entitled Supplemental Declaration of Robert W. Schumann in Support of Plaintiffs' Motion to Modify the January 20, 2000 Order of Preliminary Injunction and for Leave to Amend the Complaint	236

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4	Copy of multipage document, the first page is a memorandum to various parties from M.D. Litvack, dated 12/23/99, bearing Production Nos. S 10002 through S 10032	237
6	Copy of multipage document entitled Reply Declaration of Frank Andrew Stevenson in Support of Defendants' Cross-Motion to Vacate the Preliminary Injunction	331
5	Copy of multipage document, the first page is entitled Second Supplemental Declaration of Robert W.	413
7	Copy of multipage document, the first page is entitled Declaration of Olegario L. Craig in Support of Defendants' Cross-Motion to Vacate the Preliminary Injunction	481

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8	Copy of multipage document, the first page is entitled Reply Declaration of Chris Moseng in Support of Defendants' Cross-Motion to Vacate the Preliminary Injunction	497
9	Copy of three-page document entitled Reply Declaration of Matthew Pavolovich in Support of Defendants' Cross-Motion to Vacate the Preliminary Injunction	523
10	Copy of multipage document, the first page is entitled Declaration of Robert W. Schumann in Support of Reply Memorandum of Law in Further Support of Plaintiffs' Application for a Preliminary Injunction	531

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	Pg. 235, Ln. 7 - 13		
	Pg. 236, Ln. 2 - 3		
	Pg. 236, Ln. 8 - 13		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 239 Ln. 15 - 17		
	Pg. 239 Ln. 19 -23		
	Pg. 239 Ln. 24 -25		
	Pg. 240, Ln. 14 - 17		
	Pg. 240, Ln. 23 - Pg. 241, Ln. 2		
	Pg. 241, Ln. 13		
	Pg. 241, Ln. 15 - 16		
	Pg. 244, Ln. 13 - 19		
	Pg. 245, Ln. 16 - 21		
	Pg. 245, Ln. 25 - Pg. 246, Ln. 5		
	Pg. 246, Ln. 11 - 19		
	Pg. 247, Ln. 2 - 17		
	Pg. 247, Ln. 18 - 21		
	Pg. 252, Ln. 25 - Pg. 253, Ln. 12		
	Pg. 253, Ln. 20 - Pg. 254, Ln. 2		
	Pg. 254, Ln. 3 - 5		
	Pg. 254, Ln. 8 - 13		
	Pg. 254, Ln. 16 - 25		
	Pg. 256, Ln. 4 - 8		
	Pg. 256, Ln. 13 - 16		
	Pg. 256, Ln. 20 - 21		
	Pg. 257, Ln. 2 -4		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 257, Ln. 11 - 18		
	Pg. 257, Ln. 24 - Pg. 258, Ln. 12		
	Pg. 258, Ln. 18 - Pg. 259, Ln. 7		
	Pg. 259, Ln. 11 - 21		
	Pg. 259, Ln. 24 - Pg. 260, Ln. 11		
	Pg. 264, Ln. 7 - 9		
	Pg. 264, Ln. 11		
	Pg. 264, Ln. 14 - 15		
	Pg. 264, Ln. 20 - 21		
	Pg. 264, Ln. 23 - Pg. 265, Ln. 2		
	Pg. 265, Ln. 5 - 12		
	Pg. 265, Ln. 15 - Pg. 266, Ln. 14		
	Pg. 266, Ln. 20 - 21		
	Pg. 267, Ln. 15 - 16		
	Pg. 267, Ln. 19 - Pg. 268, Ln. 13		
	Pg. 269, Ln. 8 - 12		
	Pg. 269, Ln. 14 - 16		
	Pg. 270, Ln. 12 - 16		
	Pg. 270, Ln. 19 - 20		
	Pg. 274, Ln. 3 - 4		
	Pg. 274, Ln. 6 - 7		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 274, Ln. 10 - 13		
	Pg. 274, Ln. 18		
	Pg. 277, Ln. 16		
	Pg. 278, Ln. 18 - 279, Ln. 20		
	Pg. 279, Ln. 23		
	Pg. 279, Ln. 25 - Pg. 280, Ln. 2		
	Pg. 280, Ln. 5 - Pg. 283, Ln. 8		
	Pg. 283, Ln. 11 - Pg. 284, Ln. 11		
	Pg. 284, Ln. 16 - 20		
	Pg. 284, Ln. 22 - Pg. 285, Ln. 19		
	Pg. 286, Ln. 17 - 19		
	Pg. 287, Ln. 9 - 19		
	Pg. 287, Ln. 20 - Pg. 288, Ln. 3		
	Pg. 288, Ln. 11 - 25		
	Pg. 289, Ln. 2 - 25		
	Pg. 290, Ln. 2 - 5		
	Pg. 290, Ln. 6 - 15		
	Pg. 291, Ln. 4 - 9		
	Pg. 291, Ln. 10 - 11		
	Pg. 291, Ln. 15 - Pg. 292, Ln. 2		

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	Pg. 292, Ln. 15 - Pg. 293, Ln. 10			
	Pg. 293, Ln. 14 - 18			
	Pg. 295, Ln. 19 - 21			
	Pg. 296, Ln. 13 - Pg. 297, Ln. 11			
	Pg. 297, Ln. 14 - 16			
	Pg. 297, Ln. 20 - Pg. 298, Ln. 7			
	Pg. 298, Ln. 13 - 18			
	Pg. 298, Ln. 24 - Pg. 299, Ln. 10			
	Pg. 298, Ln. 18 - Pg. 300, Ln. 8			
	Pg. 301, Ln. 13 - 24			
	Pg. 302, Ln. 15 - 18			
	Pg. 303, Ln. 15 - 19			
	Pg. 304, Ln. 12 - 15			
	Pg. 306, Ln. 19 - 20			
	Pg. 307, Ln. 4 - 7			
	Pg. 307, Ln. 8 - 17			
	Pg. 308, Ln. 5 - 7			
	Pg. 308, Ln. 22 - 23			
	Pg. 308, Ln. 24 - Pg. 309, Ln. 2			
	Pg. 309, Ln. 6			
	Pg. 322, Ln. 14 - 23			

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 394, Ln. 15 - 21		
	Pg. 395, Ln. 4 - 5		
	Pg. 395, Ln. 8 - 25		
	Pg. 396, Ln. 24 - Pg. 397, Ln. 3		
	Pg. 397, Ln. 4 - 16		
	Pg. 397, Ln. 20 - Pg. 398, Ln. 12		
	Pg. 398, Ln. 17 - Pg. 399, Ln. 8		
	Pg. 403, Ln. 10 - 14		
	Pg. 403, Ln. 15 - Pg. 404, Ln. 25		
	Pg. 406, Ln. 6 - 13		
	Pg. 406, Ln. 24 - Pg. 407, Ln. 24		
	Pg. 408, Ln. 4 - Pg. 409, Ln. 6		
	Pg. 409, Ln. 21 - Pg. 410, Ln. 20		
	Pg. 413, Ln. 14 - 15		
	Pg. 413, Ln. 23 - Pg. 414, Ln. 11		
	Pg. 414, Ln. 24 - Pg. 415, Ln. 11		
	Pg. 415, Ln. 15 - 24		
	Pg. 416, Ln. 2		
	Pg. 418, Ln. 2 - 15		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 419, Ln. 5 - 13		
	Pg. 425, Ln. 21 - Pg. 426, Ln. 5		
	Pg. 425, Ln. 6 - 10		
	Pg. 425, Ln. 16 - 21		
	Pg. 427, Ln. 3 - 9		
	Pg. 431, Ln. 14 - 24		
	Pg. 432, Ln. 10 - 12		
	Pg. 433, Ln. 2 - 13		
	Pg. 433, Ln. 15 - 16		
	Pg. 433, Ln. 19 - 20		
	Pg. 433, Ln. 25 - Pg. 434, Ln. 9		
	Pg. 434, Ln. 18 - 19		
	Pg. 434, Ln. 25 - Pg. 435, Ln. 21		
	Pg. 435, Ln. 25 - Pg. 436, Ln. 4		
	Pg. 438, Ln. 2 - 5		
	Pg. 438, Ln. 6 - 15		
	Pg. 439, Ln. 4 - 6		
	Pg. 441, Ln. 19 - 23		
	Pg. 442, Ln. 5 - 9		
	Pg. 443, Ln. 11 - 17		
	Pg. 443, Ln. 22 - 24		
	Pg. 444, Ln. 7 - 19		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 444, Ln. 20 - 22		
	Pg. 444, Ln. 25 - Pg. 445, Ln. 2		
	Pg. 445, Ln. 6 - 9		
	Pg. 445, Ln. 13 - 14		
	Pg. 445, Ln. 16 - 25		
	Pg. 446, Ln. 2 - Pg. 447, Ln. 3		
	Pg. 447, Ln. 7 - 18		
	Pg. 448, Ln. 19 - Pg. 449, Ln. 16		
	Pg. 457, Ln. 17 - Pg. 458, Ln. 2		
	Pg. 458, Ln. 3 - 13		
	Pg. 458, Ln. 20 - Pg. 459, Ln. 8		
	Pg. 464, Ln. 14 - 23		
	Pg. 465, Ln. 2 - 3		
	Pg. 465, Ln. 9 - 15		
	Pg. 466, Ln. 11 - 16		
	Pg. 466, Ln. 20 - 24		
	Pg. 468, Ln. 13 - Pg. 469, Ln. 7		
	Pg. 469, Ln. 11 - 25		
	Pg. 470, Ln. 2 - 25		
	Pg. 471, Ln. 2 - 6		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 471, Ln. 22 - Pg. 472, Ln. 5		
	Pg. 473, Ln. 13 - 14		
	Pg. 474, Ln. 20 - Pg. 475, Ln. 8		
	Pg. 475, Ln. 18 - 20		
	Pg. 475, Ln. 23 - Pg. 476, Ln. 3		
	Pg. 476, Ln. 19 - Pg. 477, Ln. 7		
	Pg. 478, Ln. 18 - Pg. 479, Ln. 21		
	Pg. 481, Ln. 9 - 11		
	Pg. 481, Ln. 18 - Pg. 482, Ln. 11		
	Pg. 482, Ln. 22 - Pg. 483, Ln. 11		
	Pg. 482, Ln. 19 - Pg. 484, Ln. 10		
	Pg. 484, Ln. 16 - 20		
	Pg. 486, Ln. 10 - 19		
	Pg. 486, Ln. 21 - Pg. 487, Ln. 19		
	Pg. 488, Ln. 5		
	Pg. 488, Ln. 9 - 17		
	Pg. 489, Ln. 10 - 12		
	Pg. 489, Ln. 16 - Pg. 490, Ln. 13		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 491, Ln. 3 - 5		
	Pg. 491, Ln. 9		
	Pg. 494, Ln. 7 - Pg. 496, Ln. 21		
	Pg. 497, Ln. 18 - 19		
	Pg. 497, Ln. 23		
	Pg. 498, Ln. 12 - 14		
	Pg. 499, Ln. 7 - 10		
	Pg. 499, Ln. 23 - Pg. 500, Ln. 6		
	Pg. 500, Ln. 18 - 21		
	Pg. 501, Ln. 2 - Pg. 502, Ln. 10		
	Pg. 502, Ln. 15 - 17		
	Pg. 502, Ln. 19 - 20		
	Pg. 502, Ln. 21 - Pg. 503, Ln. 2		
	Pg. 503, Ln. 10 - 13		
	Pg. 504, Ln. 21 - Pg. 505, Ln. 9		
	Pg. 505, Ln. 13 - 19		
	Pg. 506, Ln. 2 - 5		
	Pg. 506, Ln. 9 - 11		
	Pg. 506, Ln. 24 - Pg. 507, Ln. 2		
	Pg. 507, Ln. 7 - 23		
	Pg. 508, Ln. 9 - 21		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 508, Ln. 22 - Pg. 509, Ln. 5		
	Pg. 509, Ln. 11 - 17		
	Pg. 509, Ln. 22 - 23		
	Pg. 510, Ln. 3 -20		
	Pg. 510, Ln. 23 - 25		
	Pg. 511, Ln. 13 - 16		
	Pg. 511, Ln. 19 - 21		
	Pg. 514, Ln. 14 - 18		
	Pg. 514, Ln. 25 - Pg. 515, Ln. 2		
	Pg. 515, Ln. 16 - Pg. 516, Ln. 13		
	Pg. 517, Ln. 6 - 11		
	Pg. 517, Ln. 12 - 15		
	Pg. 519, Ln. 17 - 20		
	Pg. 519, Ln. 22 - 23		
	Pg. 520, Ln. 4		
	Pg. 520, Ln. 8 - 10		
	Pg. 523, Ln. 21 - 23		
	Pg. 524, Ln. 15		
	Pg. 526, Ln. 18 - 19		
	Pg. 527, Ln. 3 - 11		
	Pg. 528, Ln. 15 - 19		
	Pg. 528, Ln. 25		

DEPONENT	DESIGNATION BY PAGE AND LINE	PLAINTIFFS' OBJECTIONS	PLAINTIFFS' COUNTER-DESIGNATIONS
	Pg. 529, Ln. 2 - 6		
	Pg. 532, Ln. 6		
	Pg. 533, Ln. 20 - 21		
	Pg. 536, Ln. 11 - 18		
	Pg. 537, Ln. 8 - 25		
	Pg. 538, Ln. 2 - Pg. 539, Ln. 4		
	Pg. 551, Ln. 19 - Pg. 552, Ln. 9		
	Pg. 552, Ln. 11 - Pg. 553, Ln. 4		
	Pg. 553, Ln. 6 - 9		
	Pg. 553, Ln. 21 - Pg. 554, Ln. 13		